



THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE:

CONDUCTED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.
G. C. CHAMPION, F.Z.S. R. McLACHLAN, F.R.S.
J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.
H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“Kann euch nicht eben *ganz* verstehen?
Das wird nächstens schon besser gehen,
Wenn ihr lernt *alles* reduciren
Und gehörig klassificiren.
Mir wird von *alle* dem so dumm,
Als ging’ mir ein Mühlrad im Kopf herum.”

Goethe.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

1892.

2d. set.

QL 461
E 98
2d ref

LONDON :

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

MDCCCXCII.

THE

ENTOMOLOGIST'S MONTHLY MAGAZINE.

SECOND SERIES—VOL. III.

[VOLUME XXVIII].

STYLOPIZED BEES.

BY R. C. L. PERKINS.

There are, I believe, few Hymenopterists who are not interested in stylopiized bees, both on account of the extraordinary form of the parasite, its remarkable life-history, and the curious effects produced on its host by its attacks. In 1890, I was able to collect a considerable number of stylopiized *Andrenæ* and *Halicti*, and hoped to be equally successful this season, but as these hopes were not fulfilled, chiefly owing to the wet weather, I have put together the results of my observations made last year. Shuckard, in his "British Bees," tells us that the larva of *Stylops*, feeding within the body of its host, lives on its viscera, and renders the bee abortive by destroying the ovaries, since it is chiefly found to attack the female bees. I do not know whence Shuckard derived this information; I have never found the female more liable to attack than the male, nor does the first part of his statement agree with my observations on such British species as I have examined.

The species used by me were mostly *Andrena nana*, Kir., and *Andrena Wilkella*, Kir. Unfortunately, in one way, most of my stylopiized specimens were males, as other observers have chiefly examined the other sex. On removing the integument dorsally from the bee, the large body of the female parasite will be seen lying above the

viscera, often almost entirely concealing them. The most surprising fact to me was that the internal effects of its attack should be apparently so slight!

The generative organs were examined in a number of male bees: in some cases the armature was somewhat smaller and paler than in healthy individuals. This change is quite in accordance with the effects seen in the* external cuticle generally, and, at any rate, so far as these two species are concerned, I incline to think that the changes produced are mainly cuticular. In all the ♂ specimens that I dissected, the *vesiculæ seminales* were found to contain active spermatozoa. On mounting in water their movements could be plainly seen through the walls. Very often, however, on contact with the water, the *vesiculæ* are burst, their shape is changed, becoming constricted, their size is diminished, and the contents are carried away to a distance in the currents set up. When set free the spermatozoa continued for some time in active movement. Their form was normal, and they behaved in the usual manner when treated with staining fluids.

The *testes*, consisting of several tubes very closely bound together, and somewhat difficult to separate, contained cells with one or more nuclei; probably they had ceased to be of functional importance after the full development of the bee and the formation of the spermatozoa.

As to the female bees I do not feel certain that in any of the few specimens examined the contents of the ovaries were *fully* developed. Whether the *ova* would have developed further I do not know; many *healthy* females had the ovaries in exactly a similar condition. The freshly emerged ♂ has the spermatozoa already fully developed, but the *ova* of the ♀ develop largely after its emergence. Hence the difficulty in deciding without the examination of many specimens.

The digestive tract appeared to me to be normal in both sexes of the bees examined.

It is certainly a remarkable fact that stylopized individuals are sometimes very considerably larger and finer specimens than the ordinary healthy ones! As far as the species I have named are concerned, I see no reason to doubt the possibility of their being capable of reproduction—at any rate, the males.

Moreover, in the females the *scopæ* are often perfectly normal, in spite of the parasite, and two of the specimens I caught in 1890 had them well covered with pollen. One of these, a ♀ *Halictus cylindricus*, had the ova as fully developed as a healthy hibernated specimen taken at the same time. Those individuals in which the *scopæ* are almost entirely aborted, would, of course, if capable of fertilization, be quite unable to collect the usual amount of pollen for their *larvæ*.

Whilst collecting the material for the above observations, some interesting questions concerning the life-history of the parasites

* These external changes have been discussed by Mr. Edward Saunders, Ent. Mo. Mag., 1889, p. 293.

suggested themselves. This must necessarily be different in those *genera* which infest *Andrena*, and those which attack *Halictus*, seeing that whereas the ♀ *Halictus* hibernates, the *Andrenæ* live for comparatively but a short time. Moreover, the ♂ *Halicti* all perish at the approach of winter. What, then, becomes of the ♀ parasite which is embedded in the body of these ♂ *Halicti*?

I see no escape from the conclusion that all these perish also, and that only those females which are contained in the ♀ *Halicti* survive.

This seems certain, as the larval parasites do not develop till after the hibernation of the bee. In the autumn, when the *Halicti* emerge, the body of the female parasite contains only multitudes of developing embryos, and it is only in the spring and early summer, after the hibernation of the bee, that the larvæ of the parasite escape into its dorsal canal fully developed. Before this time the ♂ *Halicti* have all long since perished.

The most puzzling part of the matter is that in some cases only the ♂ *Halicti* seem to be attacked by the parasite, the ♀ not at all, or, at least, very rarely. In 1886 and 1887, I took hundreds of ♂ *Halictus tumulorum* stylopized, but no ♀, nor have I ever seen that sex attacked. In these cases, perhaps, the parasites (unlike the others above mentioned) do develop in the autumn, and are set free as *larvæ* before the death of the *Halictus*, and then hibernate in their first stage.

It is certain that many of these parasites, especially those which infest *Halictus*, must be parthenogenetic. For instance, amongst all the *H. tumulorum* examined there was no sign of a ♂ parasite having escaped from any one of them.

The species of *Andrena* and *Halictus* which I have myself found or seen recorded by others as being liable to be attacked are:—

Halictus rubicundus, Chr.; *H. xanthopus*, Kir.; *H. 4-notatus*, Kir.; *H. al-bipes*, Kir.; *H. cylindricus*, Fab.; *H. nitidiusculus*, Kir.; *H. minutissimus*, Kir.; *H. tumulorum*, Linn.; *H. morio*, Fab.

Andrena atriceps, Kir.; *A. Trimmerana*, Kir.; *A. fulva*, Sch.; *A. nigroænea*, Kir.; *A. Gwynana*, Kir.; *A. præcox*, Scop.; *A. varians*, Rossi; *A. labialis*, Kir.; *A. minutula*, Kir.; *A. nana*, Kir.; *A. Afzeliella*, Kir.; *A. Wilkella*, Kir.

No doubt other species could be added to this list by other Entomologists, as several of the species herein recorded, so far as I know, have not previously been noticed as stylopized.

Stylopized bees are exceedingly local, though often plentiful where they are found at all; many colonies of some of our commonest *Andrenidæ* may be examined in many localities without a single

individual being found affected. I might instance such species as *Andrena nigroænea*, *A. varians*, *Halictus tumulorum*, *H. cylindricus*, and others.

The genus *Prosopis* is also said to have been found showing signs of the escape of the parasite, but none of our other genera appear to be liable to its attack.

Sopworth Rectory, Chippenham :
December, 1891.

NEUROPTERA OBSERVED IN THE CHANNEL ISLANDS IN
SEPTEMBER, 1891.

BY ROBERT McLACHLAN, F.R.S., &c.

The only excuse for publishing the following meagre notes is that practically nothing whatever has been written on the *Neuroptera* of these islands. So far as Guernsey is concerned I received valuable assistance from Mr. W. A. Luff, of St. Peter Port, when engaged on the "Revision and Synopsis of the European *Trichoptera*." I recently had the pleasure of making his personal acquaintance, and of finding that he possesses, both in *Trichoptera* and in *Neuroptera* generally, a considerably larger number of species than have been recorded, and he will hereafter furnish a complete list of those found by him in that island. My own notes refer solely to what I myself found in Guernsey, Sark, and Jersey, during a hurried visit from the 5th to 17th of September, which was luckily a period of uninterrupted fine weather.

In two main essentials the local conditions are unfavourable to Neuropterous insects (setting on one side the metamorphic geological horizon). One is the dense population, and the artificially high state of cultivation, both agricultural and horticultural; the other is the comparative scarcity of fresh water. The most productive streams are the short ones that have their origin in the precipitous south side of Guernsey and north side of Jersey—streams that flow through short, deep, and wooded valleys, and are very rapid, and in these cases it is usually only near their mouths that they are worth working; and even then they are apt to be covered by a dense growth of brambles (especially in Guernsey), or choked by water-weeds, which here attain a luxuriance far in excess of what is usual in the south of England. The longer streams flowing through more level country furnish very little. They are prone to lose themselves in moist ground before entering the sea, due largely to the requirements of artificial irrigation. The stream in St. Peter Valley, Jersey, is one of the longest in the islands, and looked promising, but it yielded

nothing whatever. At first I thought this was due to several suspicious-looking mills along its course; but these, on closer acquaintance, seemed to be of a harmless nature (so far as poisoning the water is concerned), and I was forced to the conclusion that the absence of life, both animal and vegetable, in this stream is caused by irrigation, which for a part of the year diverts the water and leaves the natural course dry. Of standing water there is very little; what there is mainly consists of the filtration from the sides of disused granite quarries, with a few small artificial ponds in private grounds. But in the west of Jersey there is a very considerable sheet of water, known as St. Ouen's Pond, to which I was able to devote only one hour.

The foregoing notes are essentially apologetic for the paucity of my captures. Mr. Luff's list will hereafter prove that a resident in one of the islands, working all through the year, and with an intimate knowledge of the country, can show better results; but at its best the list will not be long.

I was unfortunately not able to visit Alderney, owing to the brief stay I was able to make in the islands. Its closer proximity to the French coast renders an examination of its productions much to be desired, more especially regarding the problem opened up by the genus *Philopotamus*, and from the same cause a knowledge of what is to be found along the whole of the French coast opposite to the islands is also highly desirable.

Sark is a little gem of an island. It is not over-cultivated, and, for its size, it possesses a very respectable stream running through a wooded valley (Dixcart Valley), in which are some noble ash trees, &c.

GUERNSEY.

TRICHOPTERA.

Diplectrona felix, McL.—Saints' Bay and Le Gouffre. Of course it is a mere coincidence, but here, as everywhere that I have taken the species, it is associated with brambles most trying to the entomologist.

Philopotamus insularis, McL.—This form (for it is difficult to consider it a species) came originally from Saints' Bay, but it occurs also at Petit Bot and Le Gouffre, and perhaps in other small valleys in the south of the island. Those from Le Gouffre seem to be decidedly smaller and more strongly spotted than the others, and it is the most westerly locality. This is of some importance, as bearing upon the forms of *Philopotamus* found in these islands.

Plectrocnemia geniculata, McL., and *P. conspersa*, Curt., occurred at Saints' Bay and Le Gouffre.

Rhyacophila septentrionis, McL.—Saints' Bay; common at Le Gouffre.

PLANIPENNIA.

Chrysopa flavifrons, Brauer.

Hemerobius orotypus, Wallengr.

PSEUDO-NEUROPTERA.

Psocus bifasciatus, Latr.

Cæcilius pedicularius, L., and *flavidus*, Steph.

Stenopsocus cruciatus, L., and *immaculatus*, Steph.

Peripsocus phæopterus, Steph.

SARK.

TRICHOPTERA.

Micropterna sequax, McL.—Not uncommon in the gigantic masses of *Lastræa filix-mas* in Dixcart Valley.

Tinodes assimilis, McL.—At the little “dribble” forming the mouth of the stream at Dixcart Bay.

PLANIPENNIA.

Chrysopa flava, Scop.—From an ash in Dixcart Valley.

PSEUDO-NEUROPTERA.

Cæcilius flavidus, Steph.—Common.

JERSEY.

TRICHOPTERA.

Micropterna sequax, McL.—Near the source of a stream running south from Trinity Church.

Halesus radiatus, Curt.—One ♂ taken, and several examples seen at the above mentioned locality. It is interesting as being in every respect the British form, and not that generally found on the Continent, which is the *H. interpunctatus* of my “Revision.”

Diplectrona felix, McL.—Grêve de Lecq.

Philopotamus montanus, Donovan, var. *cesareus*, McL.—Very abundant at Grêve de Lecq, where it was originally found by Mr. Luff (not seen elsewhere). There seems little reason for doubt that this beautiful form and the “*Ph. insularis*” of Guernsey are only insular conditions of *Ph. montanus*, of which the typical form is unknown in the islands. Oddly enough the Jersey insect is extremely close to the var. *chrysopterus*, Morton, from the side of a Clydesdale hill. That small islands should produce distinct forms is not surprising; but it is difficult to account for the apparent isolation of such forms as *chrysopterus* and *scoticus*.

Tinodes assimilis, McLach.—Les Coupes.

Rhyacophila septentrionis, McLach.—I am sure it was this insect I saw near the waterfall at Les Mouriers.

Agapetus fuscipes, Curt.—Near Trinity Church.

PSEUDO-NEUROPTERA.

Psocus variegatus, Latr.—On the trunks of old poplars in St. Helier; *Ps. bifasciatus*, Latr.

Cæcilius flavidus, Steph.

Stenopsocus immaculatus, Steph.

Peripsocus phæopterus, Steph.

Cloëon simile, Eaton.—St. Ouen's Pond.

Sympetrum striolatum, Charp.—Abundant at St. Ouen's Pond.

Æschna mixta, Latr.—Several examples of an *Æschna* which, from its size, I take to have been this species, were seen at St. Ouen's Pond, but owing to the nature of the margins it was impossible to capture them.

Enallagma cyathigerum, Charp.—An “*Agrion*” seen at St. Ouen's Pond was probably this species.

Lewisham, London :

November 28th, 1891.

ADDITIONS TO THE LIST OF *HEMIPTERA-HETEROPTERA*
COLLECTED IN THE ISLAND OF GUERNSEY.

BY W. A. LUFF.

The insects mentioned in the following list were all captured during the present year (1891), and being added to those in my previous list, Ent. Mo. Mag., May, 1891, bring the number of species recorded for Guernsey up to 90.

Mr. E. Saunders has again kindly examined and named the specimens. One species, *Heterocordylus parvulus*, Reut., has not yet been recorded from Great Britain.

Eysarcoris aneus, Scop.—One specimen; taken by sweeping in a damp meadow near Petitbo Bay.

Picromerus bidens, Lin.—One; at the Gouffre, September 13th.

Corizus crassicornis, Lin.—Very local; several taken by sweeping sides of cliffs near the Gouffre in June and July. *C. magnicornis*, F.—One specimen; taken at the Gouffre, September 13th.

Metacanthus punctipes, Germ.—Several; by sweeping cliffs near Doyle's Monument, in August.

Nysius thymi, Wolff.—In sandy places on coast, Grande Rocque and l'Ancrese common, August and September.

Rhyparochromus prætextatus, H.-S.—One specimen; on sandy common near Grande Rocque, September 8th.

Peritrechus geniculatus, Hahn.—Several specimens; by sweeping on the cliffs at the Gouffre on July 14th.

Notochilus contractus, H.-S.—One specimen; [taken during March by Mr. E. D. Marquand.

Scolopostethus affinis, Schill.—Several; captured during May.

Orthostira parvula, Fall.—One; taken by Mr. E. D. Marquand, September 28th, on l'Ancrese common.

Dictyonota crassicornis, Fall.—Several; taken under stones on l'Ancrese common, July and August.

Triphleps minutus, Lin.—One; taken at Grande Mare, Vazon, on October 4th.

Lygus pastinacæ.—One; captured in May by Mr. Marquand.

Strongylocoris luridus, Fall.—Several; taken by sweeping on the cliffs at Petit Port, end of July.

Labops saltator, Hahn.—One; taken July 25th, at Petit Port.

Campyloneura virgula, H.-S.—One specimen; at rest on a wall in Mount Durand, on October 8th.

Etorhinus angulatus, Fab.—Two specimens; on walls, September 18th and October 13th.

Orthotylus Scotti, Reut.—One; taken by Mr. E. D. Marquand, August 25th.

Heterocordylus parvulus, Reut.—Two specimens; taken by sweeping near top of cliffs at the Gouffre.

Macrocoleus Paykullii, Fall.—Common on the cliffs in June and July.

Psallus ambiguus, Fall.—Found one in a spider's web, August 21st.

Corixa Sahlbergi, Fieb.—Common in ponds and ditches at Grande Mare, Vazon,

April 19th. *C. semistriata*, Fieb.—Several; at Grande Mare, Vazon, April 19th. *C. Panzeri*, Fieb.—One specimen; Grand Mare, Vazon, April 19th. *C. striata*, L.—Common; Grande Mare, Vazon, April 19th.

Guernsey: November 6th, 1891.

TWO NEW BRITISH HEMIPTERA.

BY EDWARD SAUNDERS, F.L.S.

TRAPEZONOTUS ULLRICHII, Fieb., Weit. Beitr. z. Nat. u. Heilkunde, p. 347, tab. ii (1836), fig. 23.

This species may be known at once from our other species of the genus by the long basal joint of its posterior tarsi, which is twice as long as the other two together. In colour and form it resembles a large *agrestis*, and has the tibiæ spinose as in that species, but the antennæ are more slender, the 3rd joint is proportionately longer, and the 2nd and 3rd joints are testaceous; the pronotum is longer in proportion to its width, the puncturation of the elytra is finer, and the membrane is pale whitish; the apices of the femora and all the tibiæ are testaceous. The entire insect is of a lighter and brighter colour.

This important addition to our list was taken by the Rev. T. A. Marshall "last summer on the cliffs near Boscastle or Tintagel, Cornwall," who, recognising what he had captured, sent it to me for verification, and very generously made me a present of the specimen.

MYRMEDOBIA DISTINGUENDA, Reut., Act. Soc. Scient. Fenn., xiv, p. 738.

Somewhat intermediate between *tenella*, Zett., and *coleoptrata*, Fall.; it resembles the former in the ♀ sex in having the short rudimentary elytra, and resembles the latter in the ♂ in having the anterior angles of the pronotum simple or nearly so, not dilated as in *tenella*.

It is rather larger than *tenella*, and in the ♂ the antennæ are longer, and the apical joint is hardly longer than the 2nd, the chief character, however, lies in the shape of the pronotum; in this species the sides gradually converge to the anterior margin, and are not dilated in front as in *tenella*, nor constricted into a short neck as in *coleoptrata*; the pronotum in front is narrower than the head across the eyes, in *tenella* it is wider. The ♀ can only be confounded with that sex of *tenella*, from which it may be known by its rather longer size, its duller surface, the more pubescent and more closely punctured abdomen, the rather straighter sides of the pronotum, and the shorter 3rd joint of the antennæ.

I took 3 ♂ and 2 ♀ by beating old lichen-covered larches near Busbridge, Surrey, in July, 1890. I put them aside as probably distinct from *tenella*, and now feel little doubt that they are rightly referred to the above species.

St. Ann's, Woking:
December 14th, 1891.

ON A TOAD KILLED BY THE LARVÆ OF BLOW-FLIES.

BY LEONARD G. GUTHRIE, M.A., M.B., B.CH. OXON., M.R.C.P., LONDON.

It has long been known that the nostrils and eyes of toads are subject to attack by the larvæ of flies, which rapidly devour the soft parts of the head until they destroy the life of the Batrachians.

In 1880, Dr. T. S. Cobbold published in the "Veterinarian" the account of a case of this sort. Dr. McMunn, of Wolverhampton, had sent him the specimens, but Dr. Cobbold was away, and on returning home found only the skeleton of the toad, and no trace of the larvæ which had destroyed its life. So the opportunities of studying and identifying the larvæ was lost.

The following account of a similar case may, therefore, be of interest:—At mid-day on August 23rd, 1891, I found a toad in a lane in Surrey. The animal was fairly nourished but sluggish in its movements; the usually active respiratory movements of the throat were slow and feeble; the tip of the nose was moist and darkly discoloured; the nostrils were ragged and slightly enlarged, and emitted a frothy discharge, within them could be indistinctly seen a mass of larvæ in active movement.

At 11 p.m., the animal avoided the light, hid its head in the corner of the box, and croaked feebly when disturbed. The nostrils were as large as small peas; the larvæ could be much more easily seen, closely packed together, and with their blunt tails showing externally; now and then one would disengage itself from the rest and wander over the head of its host in search of pastures new; the eyes were semi-closed, but still prominent.

At 9.30 p.m. on the 24th, the nostrils were much larger, and the left eye had collapsed; at 1.30, both eyes collapsed; the nostrils formed one large cavity, divided only by a thread-like septum of skin anteriorly; almost the whole of the soft palate was eaten away, leaving the bones bare, and the empty tunics of the eyes in the cavity of the mouth. The skin on the vertex was bulging and heaving owing to the mass of larvæ engaged beneath.

At 7 p.m., the larvæ had retreated to the back of the pharynx, and the toad died, its last act being to gulp down as many of its guests as possible.

After death, I placed the toad in spirits, when between three and four dozen larvæ came swarming out from the nostrils and orbits, and remained alive in the spirit for several hours.

Some, which I had removed during the life of the toad, I attempted

to rear on raw meat, hoping to obtain the pupa and imago, but although they fed ravenously at first, they soon ceased to do so, shrivelled up and died.

They crawled rapidly over my hand, but finding no abrasion, they made no attempt to devour me.

A small toad swallowed them with avidity at first, but he soon ejected them with every appearance of disgust, nor would he eat them again.

Description of larvæ.—Length, $\frac{1}{2}$ — $\frac{2}{3}$ in.; shape, conical; head pointed; tail much larger than head, and truncated; body divided into twelve segments, including head; between each pair of segments 5—10 parallel rows of small pointed scales, directed backward until the 6th segment, when the rows of scales are divided into one anterior set pointing forwards, and two posterior sets pointing backwards.

Mouth cruciform, with four lips, each of which is surmounted by a minute papilla; four similar papillæ, in two pairs, are seen on the dorsal surface of the extreme end of the tail. The upper pair of lips project beyond the lower.

Masticatory apparatus.—In three portions: (1) hooklets, (2) intermediary portion, (3) body.

Hooklets.—2, placed parallel, strongly curved downwards; bases square, connected by their inner surfaces, and articulating posteriorly with the anterior surfaces of the intermediary portion.

Muscles are attached to the inferior angle of the bases of the hooklets, and serve to protrude, depress, and retract them.

In a lower plane than the base of the hooklets, two small, irregularly shaped, horny bodies, probably rudimentary lateral maxillæ.

Intermediary portion.—Shaped like letter H horizontally placed; articulates in front with bases of hooklets, behind with anterior portion of the body of the apparatus.

Body of masticatory apparatus.—Shaped like two plough shares, placed parallel, and joined anteriorly.

Projecting from anterior surface, two long, slender, hamular processes, which, perhaps, serve to guide the muscles which elevate the hooklets.

Only two muscles can be seen. (1) A long strand, passing from the under surface of the "body" to the posterior inferior angle of the base of the claw, for retraction and depression of the hooklet. (2) Fan-shaped muscle, spreading out into the lower lips, and inserted into the anterior inferior angle of the base of the claw, for its elevation and protrusion.

Respiratory apparatus.—On dorso-lateral surface, in the 2nd segment, two structures like minute gauntlets, with five stumpy fingers placed parallel with the long axis of the body, and opening externally by five small pores or ducts. These ducts are the external openings of two muscular tubes, which extend with numerous ramifications throughout the body; the branches given off divide and subdivide, and assist more directly with those given off from the tube on the opposite side. Towards the hinder end of the larvæ these branches are again collected into two tubes, each of which ends in a disc-shaped depression at the extreme end of the

dorsal surface of the tail; these discs have raised edges, and within each are seen three oval slits, which form the terminal openings of the respiratory tract.

The alimentary tract cannot be demonstrated.

The larva moves by striking the hooklets into the subjacent surface and dragging the body after. When feeding, the hinder end of the body is shortened and fixed by means of the sharp pointed scales already described; the head and mouth are alternately raised and extended with the hooklets protruding, and then depressed with retraction of the hooklets, and by a rapid scratching movement, the food is dragged into the mouth.

This description answers fairly well with that of the larvæ of *Muscidæ* given in the Cyclopædia of Anatomy and Physiology, only Newport lays stress on his observation that the bodies of *Muscidæ* (e. g., "*Vomitoria*") are divided into at least 14 if not 15 segments, whereas in the larvæ from the toad I can only count 12 segments;* also he describes and draws the disc-shaped respiratory orifices, but he places them in the 4th segment, whilst in my specimens they are on the 12th or last segment. Neither does he describe the gauntlet-shaped anterior orifices of the respiratory tract, which, in the larvæ from the toad, are at the junction of the 2nd and 3rd segments.

Professor Brauer, of Vienna, kindly examined some of these larvæ for me, and reports that they belong certainly to the genus *Calliphora*, the species he cannot determine, but suggests that it may be *erythrocephala* or *vomitoria*.

The larva is not truly parasitic, for it speedily destroys the life of its host; yet it is difficult to regard its presence in the nostrils of toads as wholly accidental, for whilst the disease is extremely common amongst toads in certain years, it is always the nostrils and soft parts of the interior of the mouths which are attacked, and no other parts.

The fly cannot lay its eggs directly in the nostrils, for there is not room for more than one egg in each nostril at a time; moreover, the toad would most certainly object to the process. Flies form a large proportion of the food of the toad, and possibly the eggs may be laid in the mouth, whilst a pregnant fly is being swallowed; the eggs could not be swallowed, would become hatched *in situ*, and the larvæ could promptly devour all within their reach. On the back of my toad were several rows of these eggs, which I unfortunately lost, so a second explanation is, that the eggs are laid indiscriminately on the toad's back; and the larvæ when hatched make for the nostrils as the easiest point of attack. This is supported by their action when placed on raw meat. They at once sought and buried themselves in the nearest crevice or hole, such as a small blood vessel, in which they remained to feed.

It is probable that the number of toads is largely kept under by these means.

* This discrepancy is morphological, not real.—R. McL.

In 1872, toads were remarkably plentiful in the neighbourhood of Tenby, S. Wales, and I noticed that the disease was very prevalent amongst them. In the following year scarcely any could be found, and I saw none diseased. A similar sequence of events took place in the Isle of Wight, in the years 1887, 1888.

24, Upper George Street, Bryanston Square, W. :

November, 1891.

OBSERVATIONS ON COCCIDÆ (No. 9),

BY ALBERT C. F. MORGAN, F.L.S.

Genus UHLERIA, Comstock.

FIORINIA, Targ.-Tozz.

This genus, established by Comstock, is the same as the genus *Fiorinia*, which was indicated by Targioni-Tozzetti to include one species. The latter author at first named the species *Diaspis Fioriniæ* (Stud. s. Cocc., 1867), and afterwards in his Catalogue (1868) re-named it *Fiorinia pellucida*. Prof. Comstock (2nd Rep. Corn. Un. Exp. St., 1883, p. 110) gives reasons for reverting to the name *Fiorinia* for specific purposes, and adopting a new generic name, which he states is in accordance with the rule of nomenclature among zoologists. I have, therefore, followed his ruling, although Mr. Maskell prefers to maintain the original name of the genus, viz., *Fiorinia* (New Zeal. Sc. Ins., p. 57).

1. UHLERIA FIORINIÆ.

Fiorinia camelliæ, Comst., Ag. Rep. (1880), p. 329, pl. xi, fig. 7, pl. xix, fig. 4.

Uhleria camelliæ, Comst., 2nd Rep. Corn. Un. Exp. St. (1883), p. 111, pl. ii, fig. 9. *Diaspis Fioriniæ*, Targ.-Tozz. (1867), Stud. s. Cocc., pp. 14, 42. *Fiorinia pellucida*, Targ.-Tozz. (1868), Cat., p. 42; Sign., Ess. s. Coch., p. 131, pl. ii, fig. 2. *Chermes arecæ*, Boisd., Ins. Ag. (1868). *Uhleria camelliæ*, Morg., Ent. Mo. Mag., vol. xxv, p. 46, pl. i, fig. 1.

Although Prof. Comstock did not consider this species identical with *Fiorinia pellucida*, described and figured by Signoret, yet I cannot help thinking that the species which I have examined and which is clearly the same as Comstock's species, is also the same as that of Signoret and Targioni-Tozzetti; and, in that case, if we maintain Comstock's new name for the genus, then the original name *Fioriniæ* of Targioni-Tozzetti should be restored for the species. I have observed in some specimens of the larva the two processes between the antennæ,

mentioned by Dr. Signoret, suggestive of ocelli. For description and figures, see Comstock's Report (*l. c.*).

I have found this species on *Kentia Balmoriana*, in conservatories in Oporto, also on *Anthurium acaule*, from Roy. Bot. Gardens, Kew, received from Mr. Douglas, and on cocoa-palm from Barbadoes, from the same kind source. Prof. Comstock describes having found it in conservatories on *Kentia Balmoriana*, *Camellia*, and *Cycas revoluta*, and Signoret's specimens were taken from conservatories. It does not, therefore, seem to be indigenous to Europe, but rather, perhaps, to the West Indies. It does not appear to have been found in New Zealand, although Mr. Maskell describes some allied species.

Genus LEUCASPIS (Targ.-Tozz.), Sign.

1. LEUCASPIS PINI.

Coccus pini, Hart., Jahrb. üb. die Forts. des Forstwiss. (1839). *Aspidiotus pini*, Bouché, Ent. Zeit. Stett. (1851), xii, 110, 2; *nec Aspidiotus pini-folixæ*, Fitch, 2nd Rep. Nox. Ins., N. Y. St., p. 256, 1; Sign., Ess. s. Coch., p. 64. *Leucaspis candida*, Targ.-Tozz. (1867), Cat., p. 41. *Leucaspis pini*, Sign., Ess. s. Coch., p. 146, pl. vi, figs. 2, 2a, 2b; Löw, Wien., Ent. Zeit., i, p. 273, ii (1883), p. 5, 1; Witlaczil, Z. Morph. u. An. d. Cocc. Wien. (1885), taf. 5, figs. 3—7; Morgan, Ent. Mo. Mag., xxv, p. 189, pl. iii, fig. 3.

On leaves of the *Pinus maritimus*, in the neighbourhood of Oporto, I have found a species which bears a great resemblance to the *Leucaspis pini*, Hartig, described and figured by Signoret, Löw, and Witlaczil (*l. c.*), but both Dr. Signoret and Dr. Franz Löw mention that the posterior margin is surrounded by a series of conical spines, which I have not observed. In other respects the species I am about to describe agrees with their description of *L. pini*, and from the appearance of Signoret's figure, I am inclined to think that the conical spines may have been the waxy secretions from the double row of marginal secreting glands with which this species is furnished. The special feature of the genus *Leucaspis*, which was indicated by Targioni-Tozzetti, appears to have been considered by Signoret as the posterior marginal fringe, consisting of the conical spines above referred to, but if this fringe was merely the waxy secretion, this is observable in different forms in all the species of *Diaspina* before they are subjected to the heat necessary for microscopical preparation. The genus, perhaps, might be maintained on other grounds, as it seems to be a connecting link between *Mytilaspis* and *Uhleria*. The shape of the scale is very like that of a *Mytilaspis*, but, like the *Uhleria*, it has a very large second larval skin, which is entirely covered, dorsally

and ventrally, with secretion, and the adult female lies within the second larval skin, which is about three times as large as the adult insect. The first larval skin is of a bright yellow colour, and lies projecting beyond the anterior margin of the scale, whilst the second exuviae is of a dark brown, almost black, colour, except the last five posterior rudimentary segments, which are of a bright yellow colour. The length of the second stage is about 1.6 mm.

♀ scale either snowy-white or smoky-white, mussel-shaped. Length, about 2.4 mm. The posterior margin of the female adult, unlike most species of *Diaspina*, is entire, possessing neither plates nor lobes. There are five spines along each posterior lateral margin, and within the margin a double row of spinning glands. The ventral grouped glands consist of five groups, which are sometimes so contiguous as to appear like one continuous arch. The median group consists of about seventeen pores, the anterior laterals of about twenty each, and the posterior laterals of about twelve each.

The ♂ scale is similar to that of the female, but rather narrower and longer.

The species seems to be common on the continent of Europe, but it does not appear to have been found in any other part of the world, which seems remarkable, as it is a hardy species. The *Chionaspis pinifoliae*, Fitch., found on the pines in America, from Prof. Comstock's description and figure seems similar in external appearance as regards the female scale, but it is obviously quite a different species, and has been identified by him with *Aspidiotus pinifoliae*, of Fitch, which before had been considered by Signoret as a synonym of *Leucaspis pini*.

Genus CHIONASPIS, Signoret.

This genus was established by Signoret, and includes those species of which the female scale much resembles that of a *Mytilaspis*, whilst the male scale is like that of a *Diaspis*.

1. CHIONASPIS CITRI, Comstock.

Chionaspis citri, Comst., 2nd Rep. Corn. Un. Exp. St., p. 100, fig. 13 ;
Maskell, New Zeal. Sc. In. (1887), p. 54 ; New Zeal. Trans., vol. xvii
(1884), p. 23.

♀ scale of a blackish-brown colour, frequently much curved, about 1.8 mm. in length. The posterior margin of the insect has three lobes on each side, all more or less serrated, but especially the first one, which is larger than the others ; the 2nd and 3rd lobes are bilobed. There is a simple plate adjacent to each lobe, and another further along the margin, followed by another still further on anteriorly, and a small spine adjacent to each plate, in all five marginal spines and plates. The marginal spinning glands are as follows : one between 1st and 2nd lobes, one between 2nd and 3rd lobes, then a pair adjacent to the 3rd plate, and another adjacent to the 4th plate. No groups of ventral glands.

♂ scale is white, tricarinated, with the larval skin projecting beyond the anterior margin, and in all respects like that of a *Diaspis*. Length, about .8 mm.

Prof. Comstock found this species on orange trees in Louisiana and Cuba, and his figure and description enable me without difficulty to determine my specimens, which were sent to me by Mr. Douglas on a piece of the bark of orange tree sent from Demerara to Mr. McIntire. This piece of bark was very thickly populated, especially with male scales, which gave a completely white appearance to the bark, similar to that presented on the rose tree by males of the *Diaspis rosæ*. It does not appear to be a European species.

2. *CHIONASPIS BICLAVIS*.

Chionaspis ? *biclavis*, Comst., Rept., 1883, p. 98, No. 74.

♀ scale more or less circular, and appears to be of a pale brown colour, but Prof. Comstock (*op. cit.*) observes that "the colour of the scale is white, but this colour is almost invariably obscured by the layer of vegetable tissue beneath which the scale is, and which adheres closely to the scale." The scale is about 2 mm. in diameter. The adult female shows, besides the head, six distinct segments, besides the quasi-pygidium, which in this species appears to consist of four rudimentary segments. The 2nd, 3rd, and 4th, or thoracic, segments have no lateral plates, merely a small spine to each, the 5th, 6th, and 7th have each five or six simple marginal plates. The posterior margin has four lobes on each side of the median line, the first or median lobes are large, with obtuse apex and serrated margin, diverging anteriorly, and converging posteriorly; the 2nd lobe is double, but small and rudimentary, the 3rd lobe is also double and larger than the 2nd, whilst the 4th is sometimes larger than the 3rd and also double, although sometimes the 4th lobe is not very conspicuous, merely a serrated indentation of the margin. There are two minute plates between the median lobes, either two or three comparatively large ones between 1st and 2nd lobes, two or three between 2nd and 3rd lobes, and three between 3rd and 4th lobes. A stout spine is observed adjacent to the base of each lobe, with the exception of the median lobes, where the spine is very small. There are rows of simple cæcal spinning glands, extending anteriorly, and anterior to the base of the median lobes are two club-shaped processes, which appear to be tubular spinning glands within the body, and which form a characteristic feature of this species. There are no grouped ventral glands. The anus is large, and situated just below the seventh somital line.

The ♂ scale has not yet been found, so this species has only been placed provisionally by Comstock in the genus *Chionaspis*. That author mentions having found it in the conservatories of the Department of Agriculture on several plants, viz.: *Diospyrus ebenum*, *Ficus laurifolia*, a species of *Tamarindus*, *Ochrus sapota*, and *Etæcarpus cyanus*. My specimens were taken from *Anona muricata*, from Roy. Bot. Gardens, Kew, sent to me by Mr. Douglas. The popular name of "the mining scale" has been given to this species by Prof. Com-

stock, because it frequently buries itself under the epidermis of the leaf.

3. *CHIONASPIS FURFURUS*, Fitch.

This species is well described and figured by Comstock in his reports before referred to, and, therefore, it is unnecessary for me to describe it. Mr. Douglas sent me a species on *Ribes sanguineum* for identification, which proved to be this species, both male and female.* It does not appear to have been found on the red-flowering currant bush before: the apple, pear, crab, and mountain-ash (*Sorbus aucuparia*) being mentioned by other authors as the food-plants.

4. *CHIONASPIS SALICIS*, Linn.

This species was also sent to me by Mr. Douglas, on the willow and lime, and he likewise sent me some species labelled, *C. fraxini*, on the ash, but these prove to be the same as *C. salicis*. My observations in this respect as to the identity of the two species confirm Prof. Comstock's observation. He says (1st Rep., p. 320): "Specimens of *Chionaspis fraxini* received from England are identical with *Chionaspis salicis* received from M. Signoret." The small size of the male scale of *C. furfurus* has been mentioned by Comstock, only .75 mm. in length, whilst the male scale of *C. salicis* is nearly twice the length, about 1.4 mm.; but yet, on comparing the fully developed winged male of each species, I do not detect any difference in size. They both measure about .02 in., or .5 mm.

The size of the male scale, however, will be found useful for distinguishing between this and *C. furfurus*, and, besides this, in *C. salicis* the second and third plates are double instead of single, as in *C. furfurus*. Full description and figures are given by Comstock.

It is satisfactory to find that Mr. Douglas finally had an opportunity of obtaining some specimens of the *C. salicis* from the lime tree without paying the penalty referred to in his note (Ent. Mo. Mag., 2nd ser., vol. i, p. 297).

5. *CHIONASPIS EUONYMI*, Comstock.

For this species I am, as usual, indebted to Mr. Douglas, who received it from the late M. Lichtenstein, Montpellier (France). It entirely agrees with Prof. Comstock's description and figure, and, therefore, it is unnecessary for me to do more than notice its discovery in Europe.

Villa Nova da Gaya, Portugal.

* This was received on September 3rd, 1890, from Dr. T. A. Chapman, who found the scales abundant on *Ribes sanguineum* at Hereford. Now first noticed in England, yet probably introduced with the *Ribes* from N. America.—J. W. D.

ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

(Continued from Vol. xxvii, p. 329).

EXORISTA LEUCOPHÆA, Mgn.

Colour grey, scutellum quite yellow, also palpi; frontal stripe narrower than sides of the frontalia; antennæ with basal joints often partially red, third joint fully four times as long as the second in the male, but not more than three times in the female; thorax with four stripes, the outer ones maculiform; abdomen without red marks on the sides, light grey with a few dark tessellations, discal setæ very small upon both middle segments, and often wanting altogether on the second one; wings yellowish; legs with the tibiæ only partially yellow in the males, but sometimes wholly so in the females. Rare. I have only seen one British specimen, which was sent to me by the Rev. E. N. Bloomfield for identification.

E. ALBICANS, Flh.

This species somewhat resembles the former, but is only about half the size, being not more than 4—5 mm. in length, and has only the tip of the scutellum yellow; the colour is whitish-grey, the antennæ have the basal joints pale, and the third about three times the length of the second; the palpi are yellow; the thorax is striped in the middle with two very narrow lines, and has the sides almost immaculate; the abdomen is tessellated with brown, has the front edges of the segments pale, and the disc and edges armed with setæ; the wings are yellowish; the hind tibiæ testaceous. Not common. I have found it near Lake Windermere, and it is in Miss Decie's collection.

E. PERTURBANS, Ztt.

This little species is very like *E. albicans* in general characters, but is much darker in colour, and has the thorax more distinctly striped; the antennæ are quite black, have the second joint very short (hardly longer than the first), and the third five or six times as long, and also very thick, with the end pointed in front and rounded behind; the arista is thickened for half its length, and slightly pubescent; the palpi are testaceous, as well as the tibiæ; the wings are white or slightly nigriscent, without any yellow tinge. Rare. I have only seen one specimen, which I captured near Bradford.

E. FAUNA, Mgn.

This species is characterized by having the legs quite black; the palpi and scutellum rufous; and the middle abdominal segments without discal setæ. The forehead is prominent; the thorax is greyish-black, shining and indistinctly striped; the abdomen is clear grey, marked with brown reflections, and has the dorsum marked with a longitudinal black line, the hind edges of the second, third and fourth segments are also black, and the first segment is quite black. Rare. Mr. Dale has a specimen bred from *C. ligniperda*, and Mr. Bignell sent me one reared from the same moth.

E. ACRONYCTARUM, Meq.

E. hortulana, Mgn.?, part.

This is a blue-black fly, with black legs, yellow palpi, black scutellum with rufous tip, and no discal setæ on the second abdominal segment. The palpi are a little clubbed at the ends, which are pale yellow or testaceous, the roots being dark; the antennæ have the third joint about three times the length of the second; the arista has the second joint short, and the third long and thin, thickened to about half its length; the eyes are rather short haired, those of the female being almost nude; the thorax is marked by four black stripes; the abdomen is glabrous, blue-black, with black and white tessellations, the second segment has two central setæ on the posterior edge, but none on the disc; the third segment has some discal setæ as well as marginal ones. In some specimens the scutellum is nearly or quite black, and I believe it is then the same species as Meigen's *E. hortulana*, though he does not notice the absence of setæ on the second abdominal segment. In 1879 I described it under that name in the Naturalist from a specimen which I had bred from *Acronycta alni*, but I had not then had an opportunity of seeing Macquart's papers on the *Tachiniidæ* in the Annals of the French Entomological Society. I have since received many specimens of this fly from Messrs. Mosley, Porritt, Fitch, Bridgman, and others, all of which have been bred from either *Acronycta alni* or *A. psi*, so Macquart's name is very appropriate.

E. RUFICAUDA, Ztt.

This is a well marked little species, characterized by having the anal segments of the abdomen red in both sexes; the middle segments armed with setæ on the disc; the external dorso-central thoracic bristles, three in number only, behind the transverse suture; the third longitudinal wing vein with five or six setæ at its base; the little cross vein nebulous; the apical cross vein much curved like that in *E. dubia*; and the fore tarsi in the female dilated. Rare. Mr. Fitch gave me a specimen bred from *Ypsipetes impluviata*.

E. APICALIS, Mgn.

This species has the anus red like the last, but the little cross vein is clear, and the apical one straight instead of being curved. The eyes of the male are approximated; the third joint of the antennæ is only about twice the length of the second; the fronto-orbital bristles only extend to about the base of the antennæ, but at a little distance below them there is another row of little setæ on the cheeks; the thorax is of a bluish colour, and the legs have brown tibiæ. Very rare. I have only seen one example, which is in Mr. Dale's collection. Schiner says that it has been bred from *Saturnia carpinii*.

E. LOTA, Mgn.

This fine species (10—11 mm. long) is chiefly characterized by having black palpi with red tips, which are also rather clavate. The colour of the thorax and abdomen is bluish-black, coated with hoary pubescence; the former is marked by four slender, rather indistinct lines, the latter is tessellated with black and white;

the middle abdominal segments being armed with setæ on the disc, those on the second ring being very small; the forehead is a little prominent in the male; the antennæ have the third joint fully three times as long as the second; the arista is long and slender, a little thickened at the base, and slightly and gradually tapering towards the end; the scutellum is yellow, and the hind tibiæ are ciliated with an even row of bristles in both sexes. Not common. Mr. Dale sent me a specimen from a *Tæniocampa*, Mr. Bignell one from *A. psi*, and Mr. Fitch one from *A. tridens*.

E. GRANDIS, Ztt.

This, about the largest of the *Exoristæ*, being from 10—12 mm. in length, is very similar in size, shape and general appearance to *Tachina larvarum*. It has the same shaped apical cross wing veins, they being long, curved, oblique, and furnished with a cubital appendix. The forehead is prominent; eyes widely separated in both sexes; the frontalia occupying about a fourth of the width of the head in the male, and a third in the female; the antennæ are drooping, the second joint is rather elongated, and the third about two and a half times as long; the arista has the second joint distinctly shown, and the third long and thickened for rather more than half its length; the palpi are yellow and filiform; the fronto-orbital bristles extend down two-thirds of the face, six or seven being below the roots of the antennæ; the facialia are bare; the thorax is dull black, covered with hoary pubescence, which is thick and white on the front margin; it is marked by four rather wide black stripes; the scutellum is more or less rufescent; the abdomen is marked by three grey bands, the second segment has two large central bristles on the margin, but none on the disc; the third segment has one or two on the disc, in addition to those on the margin; the aperture at the end of the first posterior wing cell is very small; the outer cross vein is sinuous; the hind tibiæ are ciliated with nearly an even row of bristles, having one long one near the centre. This fly is in Mr. Dale's collection, reared from *Saturnia carpinii*, and I have received specimens from Messrs. Mosley, Bignell, and Fitch, all of which were bred from the same moth. Prof. Mik says that the *T. pavoniæ*, Ztt., is identical with this species.

E. AFFINIS, Flin.

This species has the palpi and scutellum yellow, and the sides of the second segment of the abdomen red. The thorax is black and shining, with four indistinct black stripes, and only three external dorso-central bristles behind the suture; the abdomen is black, glabrous and very setose, having both discal and marginal bristles on all the segments; it is also tessellated with white patches; the antennæ have the third joint only a little more than double the length of the second; the fronto-orbital bristles extend half way down the face; the sides of the frontalia are black and glistening in the female; the wings are yellowish-brown, with curved apical cross veins. Walker includes this species in his list, but his description does not correspond with that of other authors, nor with the character of the fly itself, typical specimens of which I have received from the Continent. Very rare.

E. NOCTUCIDA, Rnd.

This has the palpi yellow, and the end of the scutellum a little rufous. The eyes of the male are approximated, the frontal stripe is as wide or wider (in most

specimens) than the sides of the frontalia; the fronto-orbital bristles only extend a short way down the face, three or four being placed below the roots of the antennæ in an irregular row or patch (especially in the male); the third joint of the antennæ is about four times the length of the second; the facialia are almost nude; the thorax is black, very hoary on the front and sides, and marked by four slender stripes; the abdomen is rather setose, having bristles both on the disc and margins of the segments, it has the sides hoary, with the centre of the dorsum black, as well as the hind margins of the segments; the wings have the outer and apical cross veins both nearly straight, the former being placed near to the angle of the latter. I received three specimens of this rare fly from Mr. Fitch some years ago, all of which were bred from *Acronycta tridens*.

E. JUCUNDA, Mgn.

This rather small species (6 mm. in length) has the scutellum wholly black or rather grey. The palpi are yellow; the antennæ long, thick and straight, the second joint being very short, and the third five or six times as long; the arista is thickened for nearly two-thirds of its length, the thickened portion ceasing rather abruptly; the thorax and abdomen are grey, being coated with hoary pubescence, the former has four stripes, the central pair narrow and the outer ones wide and interrupted; the abdomen is tessellated with black patches, which assume the form of black bands when viewed from behind; the segments are armed with rather small setæ on both the discs and posterior edges; the venter is grey with white margins to the segments;* the wings have the apical cross veins concave, and terminating close to the apex of the wing. Not common. I found one specimen at Bingley, near Bradford, in 1874, and another at Silverdale in North Lancashire in 1881; it is also in Miss Decie's Collection.

E. parens, Rnd., has been recorded as a British species, and in 1880 I received two flies from Mr. Bignell (bred from *Polia flavicincta*) which I thus named; upon further research, however, I believe that they were only varieties of *E. vulgaris*, and I now doubt whether *E. parens* is a distinct species. *E. prominens*, Mgn., is another doubtful species, Meigen omitting the colour of the palpi. I formerly labelled several specimens with this name, one of which is in Mr. Dale's collection. I now think that they are also varieties of *E. vulgaris*.

(To be continued). 35

DOUBLE-BROODEDNESS: WHETHER INFLUENCED BY THE STATE OF THE FOOD-PLANT?

BY F. MERRIFIELD, F.E.S.

The statements in your December number as to *Stauropus fagi* proving partially double-brooded during the past season, lead me to invite a consideration of the question with which I have headed these remarks. For experimental purposes I have during each of the last four years bred, or had bred for me, not less than ten

* Macquart says by mistake "*incisions noires*"; Meigen, however, states that the lines are white, and I find them to be so.

families (*i. e.*, offspring of a single pair) of the spring feeding larvæ of *Selenia illustraria* (*tetralunaria*), the individuals of each family averaging perhaps 50 or 60 in number. These have invariably (barring an occasional straggler which has fed slowly and gone over till spring) emerged as moths the same summer, with the exception of four families that (barring two individuals which emerged the same summer) went over till the next spring. The families (40 in number, or thereabouts) which followed the normal course were reared on trees in the open air; the four exceptional families were brought up on cut food indoors. There was doubtless a substantial difference in the temperature between the two classes, probably not less than 5 or 6 degrees, F.; but a higher temperature being, as is well known, a cause which promotes double-broodedness, the operation of this would be in the opposite direction to that of deferring emergence till next spring; and in fact some of these four families pupated rather earlier than those which were sleeved. Some other cause than temperature must, therefore, be sought for. I have mentioned that each of the four families was fed on cut food. Further, I have ascertained that in the case of one the larvæ were kept in an open wooden or cardboard box, and fed with twigs simply laid in the box, and that the other three families of larvæ were fed in large plum-bottles on food not standing in water, and further, that these plum-bottles stood away from draughts of air, and, in fact, that moisture was rarely observed on the glass. These circumstances seem to me to point to the different condition of the food plant, as regards the circulation of sap and internal dryness, as the probable cause of the difference in the behaviour of the larvæ. In a state of nature the autumn larva, which is destined to emerge in the spring, feeds during the latter part of August, September and October, on leaves in which little sap is circulating; in this respect the condition of its food-plant must bear some resemblance to that of the cut food under the circumstances I have described.

Of course the cases of *S. fagi* mentioned by Mr. Holland are in several respects different; for example, that species is only exceptionally double-brooded, whereas *S. illustraria* is so normally. Still, in the case of *S. fagi* the statement is that it is those fed indoors which are not emerging as a second brood, while some of those "fed under natural conditions," *i. e.*, on growing food, are so emerging; and therefore, it would seem not improbable that the former have been fed on more sapless food, and that may be the reason why they are all "going over" till next spring,

Brighton: December, 1891.

Callimorpha Hera.—I see by a Report of the Entomological Society's Meeting of November 4th, that a discussion took place as to the manner in which *Callimorpha Hera* had been introduced into England. Thinking it would be of interest to you, I enclose a copy of a statement made by the late Dr. F. C. Lukis in a Guernsey Guide Book, published in 1863.—W. A. LUFF, 7, Mount Row, Guernsey: December, 1891.

[Extract from *Le Lièvre's Guernsey Guide*, 1863, p. 166.—"Now referring to the *Callimorpha Hera*, we think it due to science and to ourselves to give the following account:—This is a most lovely moth, but enjoying the unenviable soubriquet of the "*Guernsey Tiger*," although met with in nearly all the other

islands. Having been first recognised in Guernsey, it bears its island name, innocently sharing also its feline cognomen with the two other tigers, but from which it is as distinct a species and pertains to as different a genus as the royal native of Bengal. An incident connected with this fine moth deserves especial notice, as it may affect the consideration of the natural distribution of this species. Some few years ago this moth was a far greater desideratum in British collections than it is at present. A well known author on the British *Lepidoptera* desired a considerable number for the advantage and convenience of exchanging with other collectors, and in order to investigate its habits, metamorphoses, &c., requested the writer of these observations to forward to him a large supply of the eggs or larvæ, if, indeed, it were by any means possible to obtain so desirable a treasure. The accomplishment of such a request was to all appearances surrounded by as many difficulties as the Viceroy's (Abbas Pasha) peremptory order, 'Go, get me a hippopotamus!' The dangers were certainly less numerous, and, if any existed, were those obviously of disappointment alone. By dexterous skill, however, the feat was accomplished. Ingenious devices, known only to the entomological fraternity, were employed.

"The parent moths were carefully collected, and eggs obtained in satisfactory abundance. Doubts and fears still hung over them until the following spring, to be removed suddenly one morning by the welcome appearance of several dark little caterpillars creeping out of their respective shells. They were active little creatures, and eagerly sought some food. Then arose a new difficulty on which the successful result of a year's anxiety entirely depended; but tempting bits of various plants were offered them, until it was discovered that these sagacious babies had no objection to a meal on lettuce and borage, devouring the latter with avidity. They were now destined to undergo a succession of dangers, in the hazard of transmission through the post, to say nothing of being closely packed with a supply of provision for two or three days.

"They bore the long journey admirably, and safely arrived, were soon divided into several groups, some of which were set at liberty. These thrived wonderfully, and established themselves completely, and have since spread through large districts in Yorkshire, being recently found even on the borders of Wales; and probably also have spread in other directions, so as to claim a place in the British list, which, indeed, the author referred to has been complaisantly pleased to allot them in his work, with what justice the reader may determine as he may."]

Note on Pieris napi, var. bryoniæ.—Mr. Barrett, p. 329, in volume for 1891 of this Magazine, draws attention to an Irish specimen of *Pieris napi*, which in colour approximates closely to the variety *bryoniæ* of that species.

I have two singular specimens, which were kindly given to me by Mr. de Vismes Kane, taken in the county of Cavan in August, 1882; they are both much darker than any I have of the spring emergence of *P. napi*, indeed, are intermediate between that form and the variety *bryoniæ*; in one the ground colour of the wings is white, in the other yellow. The interesting fact in these two insects is that, though of the autumnal emergence, they are totally unlike those that appear at that time of year, but on the contrary are exaggerations of the characteristics of the spring form.

The true *bryonia* varies in the same manner in the ground colour of the wings. I have one from Russia which is white, and not brownish-yellow, as is usually the case in the Alpine form.—J. JENNER WEIR, Chirbury, Beckenham, Kent: *November 30th*, 1891.

Satyrus Semele in woods.—At p. 331 of the December number of this Magazine, Mr. McLachlan records that in the Forest of Fontainebleau *S. Semele* "was to be seen in abundance feeding at the exuding sap of huge trees." During the last 28 years I have noticed the occurrence of *S. Semele*, from the end of July to the middle of August, not only on open downs and heaths, but in many of the densest and darkest "Enclosures" of the New Forest, and in other woods in Hants and Dorset, where it frequents the stems of fir trees, sitting thereon, with the wings generally closed, feeding on old "sugar." The colour and markings of the under-side of *S. Semele* harmonize so well with the lichen-covered fir trunks that it is not always easy to detect the presence of this species when sitting on them.—H. Goss, Surbiton: *December*, 1891.

Astata stigma.—On the 5th July last, I was fortunate in meeting with a male of the above species on the sand hills fringing the sea coast at Wallasey, Cheshire; the insect was running along, in hot sunshine, upon the bare sand, close by a colony of *Pompilus plumbeus*; at first glance I almost passed it as a specimen of *P. gibbus*. This is the second record from this coast: the first being a capture on the sand hills near Southport in June, 1879, by the late Mr. Benjamin Cooke.—WILLOUGHBY GARDNER, Hoylake, Cheshire: *November*, 1891.

Note on Nacerdes melanura, Linn.—Specimens of *Nacerdes melanura*, Linn., have recently been forwarded to me for determination by Mr. R. W. Lightfoot, of Cape Town. He states that the insect had been found by Mr. Péringuey and himself in Cape Town, but only in houses. This species, common on old posts on the sea shore a little above high-water mark, especially on our southern and eastern coasts, seems to be gradually getting introduced in timber to many distant parts of the world. It has been recorded from many widely-separated localities in the Palæarctic region, also from United States, Yucatan, and Costa Rica. The insect is occasionally met with in inland localities, and not long ago I noticed a specimen crawling on the platform of King's Cross Railway Station.—G. C. CHAMPION, 11, Caldervale Road, Clapham, S.W.: *December 7th*, 1891.

Coleoptera in the Plymouth district.—Pressure of business has prevented much attention to entomology this season, but the following list is perhaps not uninteresting. I should remark that one or two of the specimens were taken in former years, and have been awaiting authoritative determination, and I am indebted to the kindness of Mr. Champion and Mr. Newberry in these cases.

Pterostichus æthiops has been again taken on Dartmoor by a friend of mine resident in the neighbourhood, and is, I think, the only noteworthy insect of its class which I have acquired this year. *Staphylinus stercorarius* under stones on the slopes of the coast, one specimen by Mr. Bignell and one by myself. *Sipalia ruficollis*, shaken out of faggots in the woods at Ivybridge, and out of the same bundle I was surprised to get a specimen of *Niptus hololeucus*; on the sea shore

Falagria thoracica, *Homalota plumbea*, *Saprinus maritimus*, and a single specimen of *Aceritus punctum*; in flood rubbish, *Stiliculus orbiculatus*, and *Paramecosoma melanocephala*, abundant; and in the "runs" of a *Cossus*-infested oak, *Cryptarcha strigata* and *Soronia punctatissima* in profusion. It may be interesting to remark that I traced the habitat of these two latter insects by the quantity of *Syrphidæ* hovering around the trunk of the tree. It was a hot day, and they were probably attracted by the smell engendered. Mr. Lemann, who was with me in the excursion, made some very good captures among them. On a holly close by, *Pachyta 8-maculata* was swarming; and from the same locality a few days later Mr. Lemann kindly brought me *Strangalia 4-fasciata*. By sweeping the herbage on margins of a stream *Poophagus nasturtii* was obtained. In a street of Plymouth *Dermestes Frischii*; in dry shingly rubbish *Cryptohypnus dermestoides* and its var. were taken, and on Dartmoor a single specimen of *Corymbites æruginosus*.

My best capture, however, is that of *Psammobius porcicollis* (several specimens) at Whitsand Bay, at roots of plants in the sandy soil, some of them being quite six inches below the surface. Amongst a lot of beetles taken at odd times by Mr. Hobbs, a bird preserver of Devonport, I have pleasure in noting *Hister stercorarius*; unfortunately no record of the exact locality has been kept.—JAMES H. KEYS, Plymouth: November, 1891.

Coleoptera from the New Forest, &c.—The following list of less common beetles taken by me, or sent to me by persons collecting for me, since the beginning of the year 1887, and the localities where they were taken, may prove not altogether wanting in interest. *Calosoma inquisitor*, common in New Forest, in 1888 and 1889, scarce since then. *Dyschirius extensus*, Deal, under flood refuse; *D. impunctipennis*, under stones and in burrows of *Bledius fracticornis*, Braunton Burrows; I have also from under seaweed in Poole Harbour a species of *Dyschirius*, apparently intermediate between *nitidus* and *politus*. *Panagæus 4-pustulatus*, Woolacombe sands; *Pterostichus dimidiatus*, near Wellington College; *Harpalus tenebrosus*, Torquay; *Deronectes latus*, Darent Wood; *Hydroporus marginatus*, S.W. Hants or E. Dorset (taken on a walking tour, exact locality not known). *Hydrous piceus*, London, taken in Lincoln's Inn Gardens, where the pigeons had eaten off all the legs of the beetle, which, however, was still alive, and had evidently come from the pond, which was being cleaned out. *Calyptomerus dubius*, Offchurch Bury, near Leamington, also *Megatoma undata*, *Opilus mollis*, and *Hylesinus oleiperda*, from the same locality. *Hydnobius punctatissimus*, Portland, two specimens in a puddle. *Hister bissexstriatus*, Deal; this species, with *Saprinus æneus*, *immundus*, and *metallicus*, seems to occur sparsely on the face of the sandhills, or in sand under dung; *S. maritimus*, on the other hand, occurred in great numbers in April, 1890, in the sand close by the sea, but it was not to be taken at the same spot this year. From Deal I may also record *Dermestes undulatus*, *Anthicus bimaculatus* (1890), and *Melanotus punctato-lineatus* (1891). From the neighbourhood of Sittingbourne I have *Aphodius consputus* and *Zenkeri*, the former occurring on a window pane, the latter taken flying; also *Conopalpus testaceus*. At Poole Harbour I took, in 1887, under seaweed a damaged specimen of *Plectroscelis Sahlbergi*. From the New Forest, in addition to those already mentioned from that locality, I have *Anthaxia nitidula*, *Agrius sinuatus*, and, I believe, *viridis*, *Elatér elongatulus*, *Lythrophorus sanguino-*

lentus and *pomona* (the latter seems fairly common about Brockenhurst), *Megapenthes tibialis*, *Cardiophorus asellus*, *Athous rhombeus*, *Corymbites metallicus*, *Sericosomus brunneus*, and many other *Elateridæ*. *Prionocyphon serricornis*, both species of *Haplocnemus*, *Conopalpus testaceus*, *Tillus elongatus*, *Pissodes notatus*, *Asclera sanguinicollis*, *Tetratoma fungorum* (the latter common in the autumn on large white *Boletus* on a particular birch, which had recently blown down, apparently only occurring singly elsewhere), and *Anoplodera sexguttata*, which I have also taken at Darenth this summer.—ARTHUR J. CHITTY, 33, Queen's Gate Gardens, S.W.: October 21st, 1891.

Locusta viridissima near *Charmouth*.—While at Charmouth in August I obtained four specimens of this, the largest of our grasshoppers; one of them flew into our landlady's face after dark. I once saw a specimen on a house at Broadstairs, but have never seen any other alive. I put a few *Hymenoptera* into my bottle, among them being *Crabro cribrarius*, *Panurgus calcaratus*, and *Pemphredon lugubris*.—W. W. FOWLER, Lincoln: November 11th, 1890.

[Very often abundant in the Isle of Wight, &c.—R. McL.]

Reviews.

INDEX TO THE KNOWN FOSSIL INSECTS OF THE WORLD, INCLUDING MYRIAPODS AND ARACHNIDS: by SAMUEL HUBBARD SCUDDER. Forming No. 71 of the Bulletins of the United States Geological Survey. Pp. 744, 8vo. Washington, 1891.

This is another of the same author's laborious compilations, for which he will receive the gratitude of present and future workers. In 1890, he published a bibliography of fossil insects, containing an exhaustive list of workers and their works. He now supplements this by a list of the fossils described arranged geologically according to Orders, and with full bibliographical references to each fossil. The total number of specific references is 6334, and on analysing this we find that 558 are Palæozoic, 1743 Mesozoic, and 3933 Cenozoic (or Tertiary). In the Palæozoic, the author is careful to use the terms Orthopteroid, Neuropteroid, &c. (instead of *Orthoptera*, *Neuroptera*, &c.), and the references are mainly to these two series. To all who work up Fossil Insects this Index is indispensable, and to the general entomological reader, with some geological knowledge, it will be found both useful and suggestive.

CATALOGUE RAISONNÉ OF SILK-PRODUCING LEPIDOPTERA: by ALFRED WAILLY. Pp. 35, 8vo. London, 1891.

Mons. Wailly is well known as an enthusiast in introducing and rearing the various silk-producing *Lepidoptera* of the world, and this little book will be found useful by those interested therein. It is divided according to continents, the species belonging to each being considered separately. There is much information as to some of the species; others are merely catalogued. It does not aim at being scientific, so we will not criticise it from that point of view. As it bears no publisher's name it is probably mainly intended for private circulation.

DEVON COLLEMBOLA AND THYSANURA: by EDWARD PARFITT. From the Trans. Devon Assoc. Advancement of Science, &c., xxiii, pp. 322—352. 1891.

We cannot but admire the persistency with which this veteran worker continues to list the entomological productions of Devonshire. In the introductory remarks he states that he has found in the county 44 *Collembola* and 6 *Thysanura*, a very large proportion of the whole that are known as British, and some additions are made. Original descriptions are given of the species and varieties.

JOURNAL OF THE INSTITUTE OF JAMAICA: Vol. i, No. 1. Kingston, Jamaica. November, 1891.

Concurrently with the appointment of Mr. Cockerell as Curator of the Museum, the Institute commences a Quarterly Journal, edited by the Secretary, Mr. F. Cundall. It is devoted to Literature, Science, and Art. The first Part contains notes on the transformations of native *Lepidoptera*, by Mr. Cockerell.

Obituary.

Sir William Macleay.—The death of this well-known Australian Entomologist and patron of Natural History in the colonies has been announced, at the age of 71. He was a collateral descendant of the celebrated William Sharp Macleay, and was born in Scotland in 1820. He emigrated to New South Wales in 1839, and was for a time engaged in sheep farming. From 1854 to 1874 he was a Member of the Legislative Assembly of N. S. W., and occupied himself especially in the furtherance of public works, and since then of the Legislative Council. He was knighted in 1889. In 1874, he conducted, at his own expense, a scientific expedition to New Guinea. He was founder and first President of the Entomological Society of New South Wales, and of the Linnean Society of New South Wales, and in the publications of both Societies (and elsewhere) are to be found numerous valuable entomological papers from his pen, chiefly on *Coleoptera*, but also occasionally on insects of other Orders.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: Nov. 16th, 1891.—The President, Mr. W. G. BLATCH, in the Chair.

Rev. C. F. Thornehill showed a specimen of *Sphinx convolvuli*, taken on September 30th, at Burton-on-Trent. Mr. G. T. Baker showed *Callimorpha Hera* from Jersey and the continent; also *Nemeophila plantaginis*, var. *Hospiton*, from various localities. Mr. P. W. Abbott showed *Nonagria geminipuncta* and *Toxocampa pastinum*, series of each from the Isle of Wight. Mr. R. C. Bradley showed series of the genus *Calliphora*, including *grænlandica*, *azurea*, *cognata*, &c. Rev. C. F. Thornehill said that he had found in a cellar at Stretton, near Ashley, forty or fifty specimens of *Gonoptera libatrix*, also specimens of *Triphosa dubitata*. Rev. E. J. Nurse read a paper on "Wicken Fen and its Moths," mainly dealing with a holiday spent there this year, but including much information collected during some years' residence there.

December 7th, 1891.—Mr. R. C. BRADLEY in the Chair.

Mr. R. C. Bradley showed a box of *Lepidoptera* taken during the year at Sutton. Mr. C. J. Wainwright showed *Asteroscopus Sphinx (cassinea)* from Hanbury Park, and *Calymnia affinis* from Arley. Mr. E. C. Tye showed a box full of captures made this year, including *Chærocampa porcellus* from Sutton, *Lithosia mesomella* from Wyre Forest, *Noctua glareosa*, Sutton, &c. Mr. P. W. Abbott showed a box full of this year's captures, including *Phibalapteryx lignata*, Sutton, *Noctua Dahlii*, Sutton, &c. Mr. G. T. Baker showed four boxes full of Scotch insects, collected at various times in the Shetlands and Hebrides, at Rannoch and Forres, by Salvage.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: December 14th, 1891.—The President, Mr. S. J. CAPPER, F.L.S., F.E.S., in the Chair.

Mr. Willoughby Gardner read a paper, entitled, "A preliminary list of the Aculeate Hymenoptera of Lancashire and Cheshire, with notes on the habits of the genera." The writer acknowledged the valuable assistance of the following local workers, from whose notes, together with his own, he was enabled to compile his paper, viz.: Miss E. C. Tomlin, Mr. J. T. Green, the Rev. H. H. Higgins, Mr. J. R. Hardy, Mr. R. Newstead, F.E.S., and the late Mr. B. Cooke. The paper included a list of 161 species hitherto recorded in the counties of Lancashire and Cheshire, giving full particulars of localities, &c.—this out of 373 species at present described as indigenous to Great Britain. The President exhibited a type collection of *Hymenoptera*. Miss Tomlin, of Chester, a collection of *Hymenoptera*, and specimens of *Hylastes opacus*, Er., *Trypodendron domesticum*, L., and *Myetophila piniperda*, L. Mr. Newstead, nests and specimens of *Bombus pratorum*, *Megachile circumcincta*, *Andrena nigroænea*, *Colletes cunicularia*; genitalia and leg of *Crabro palmipes*. Mr. Stott, a specimen of *Chærocampa celerio*, on behalf of Mr. H. S. Clark, of Douglas, where it was captured this summer. Dr. Ellis, a collection of *Coleoptera* made in the Spanish Pyrenees. The Library and Museums Committee, nests and specimens of British and Foreign *Hymenoptera*, and by Mr. J. T. Green, a collection of *Hymenoptera*.—F. N. PIERCE, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: December 2nd, 1891.—The Right Hon. LORD WALSLINGHAM, M.A., LL.D., F.R.S., Vice-President, in the Chair.

Mr. Henry A. Hill, of 132, Haverstock Hill, Hampstead, N.W.; Mr. Frank Nelson Pierce, of 143, Smithdown Lane, Liverpool; and Mr. Carleton F. Tufnell, of Greenlands, Border Crescent, Sydenham, S.E.; were elected Fellows of the Society.

Dr. D. Sharp exhibited and commented on a number of photographs of various species of *Lucanidæ* belonging to Mons. René Oberthür.

Mr. C. G. Barrett exhibited a number of specimens of local forms and varieties of *Lepidoptera*, taken by Mr. Percy Russ, near Sligo, including *Pieris napi*, var. near *bryoniæ*; *Anthocharis cardamines* (male), with the orange blotch edged with yellow, and yellowish forms of the female of the same species; very blue forms of *Polyommatus Alsus*; males of *P. Alexis*, with the hind margin of the underwings spotted with black, and very handsome forms of the female; also varied series

of *Agrotis cursoria*, *A. tritici*, *A. valligera*, *Hydræcia micacea*, *H. nictitans*, *Epunda lutulenta*, *Hadena protea*, *Odontoptera bidentata*, *Cidaria immanata*, *C. testata*, *C. pyraliata*, and *Boarmia repandata*.

The Rev. S. St. John exhibited two specimens of *Lycæna argiades*, taken in Somersetshire by Dr. Marsh, in 1884; three specimens of *Deilephila euphorbiæ*, bred from larvæ found feeding on *Euphorbia paralias* on the Cornish coast in September, 1889; and a series of various forms of *Anthocelis pistacina*, all taken in a garden at Arundel. Lord Walsingham, Mr. Barrett, and Mr. McLachlan took part in the discussion which ensued.

Mr. Jenner Weir exhibited and made remarks on two dark specimens of *Zygæna Minos* which had been caught by Mr. Blagg in Carnarvonshire. He remarked that the specimens were not representatives of complete melanism, and suggested that the word "phæism" would be a correct word to apply to this and similar departures from the normal coloration of a species.

Mr. C. J. Gahan exhibited specimens of the common "book-louse," *Atropos pulsatoria*, Fabr., which he had heard making a ticking noise similar to that made by the "death-watch" (*Anobium*).

Mr. B. A. Bower exhibited the following rare species of *Micro-Lepidoptera* :—*Spilonota pauperana*, Fröl.; *Gelechia osseella*, Stn.; *Chrysoclysta bimaculella*, Haw.; and *Elachista cingilella*, Fisch. Lord Walsingham and Mr. Tutt made some remarks on the specimens.

Mr. R. Adkin exhibited a variety of *Anthocharis cardamines*, and one specimen of *Sesia scoliaformis* bred from a larva found at Rannoch.

Mr. G. T. Baker read a paper, entitled, "Notes on *Lycæna* (recte *Thecla*) *Rhymnus*, *Tengstræmii*, and *pretiosa*." A discussion followed, in which Lord Walsingham, Mr. Elwes, and Mr. Baker took part.

Mr. F. Merrifield read a paper, entitled, "The effects of artificial temperature on the colouring of *Vanessa urticæ*, and certain other species of *Lepidoptera*." The author stated that both broods of all three species of *Selenia*, *Platypteryx falcataria*, *Vanessa urticæ*, *Bombyx quercus*, and var. *callunæ*, and *Chelonia Caja* were affected by temperature in the pupal stage, the lower temperature generally producing the greater intensity and darkness of colour; some of the *Vanessa urticæ* made a near approach to the var. *polaris* of Northern Europe. A long discussion ensued, in which Mr. E. B. Poulton, Mr. McLachlan, Prof. Meldola, Mr. Barrett, Mr. Jenner Weir, and Lord Walsingham took part.

Mr. W. Bateson read a paper, entitled, "On the variation in the colour of the cocoons of *Eriogaster lanestris* and *Saturnia carpini*," and exhibited a large number of specimens in illustration of the paper. Lord Walsingham congratulated Mr. Bateson on his paper, and on the intelligent care and method shown in his experiments, and said that he was glad to see that at Cambridge there was an entomologist ready to enter this interesting field of investigation, and perhaps at some future day to contest the palm with Mr. Poulton as representing the sister University of Oxford. He had noticed that the larvæ of *S. carpini*, if left in a box with dead food, and probably partially starved, made a light-coloured cocoon; but that when the cocoon was made under natural conditions, on living food-plants on the moors, it was of a dark colour. Mr. Poulton, Prof. Meldola, Mr. Bateson, and others continued the discussion.—H. GOSS and W. W. FOWLER, *Hon. Secs.*

A NEW GENUS AND SPECIES OF *ALEURODIDÆ*.

BY ALBERT C. F. MORGAN, F.L.S.

I received from Mr. Douglas some leaves of *Anona muricata*, forwarded by Mr. Jenman, Superintendent of the Botanic Garden at George Town, Demerara, which were abundantly covered on the under-side with a white, silky, flocculent substance. In the midst of this material were to be seen some insects with four snowy-white wings, and it was thought that these might prove to be the *Aleyrodes** *cocois* described by Curtis (Gard. Chron., 1846, p. 284). Subsequently, Mr. Douglas sent me some leaves of *Richardia pacifica*, also from Demerara, besides some leaves of the coffee-plant from the same locality, both of which were much covered with a white flocculent substance, similar to that on the *Anona muricata*.

Examining first the coffee-plant leaves, I found a difficulty in dissolving the flocculent matter, which would not subject itself, or at least but imperfectly, to the action either of alcohol or heat. Embedded in this substance I found a mandibulated insect, with four wings and six legs, the tarsus with one dentate claw and two digitules, body pilose. I apprehend that this insect, probably a *Hemerobius*, was predaceous on the original inhabitant of the secreted substance. Besides this insect there was buried in the white flocculent material one of the *Coccinellidæ* (black), which family is well known to be predaceous on *Coccidæ*, but I could not find any Homopterous insect, which probably had already been devoured by its enemies. On the *Richardia*, however, I found an insect similar to that mentioned above as found on the *Anona*, and besides this, somewhat to my surprise, I found two male winged species of *Coccidæ*, obviously of the *Diaspina* group, but in the absence of the female I am unable to determine the species. I have since received from the same source some leaves of the cocoa-nut palm, on which I find an insect similar to that on the *Anona* and *Richardia*, but very much smaller, in fact, about half the size, and it is upon these two species, both the larger and the smaller, that I propose to offer a few observations.

Réaumur (Mém. tom., ii, vii, pl. 25) describes the life-history of an insect on the cabbage, which Prof. Westwood considers to be *Aleyrodes chelidonii*, and of which the larvæ and pupæ are said to be devoured by a Coleopterous larva belonging to the *Coccinellidæ*.

* Burmeister (Handb. d. Entomol., ii, p. 82 [1835]) says :—"Latreille's Orthographie *Aleyrodes* muss in *Aleyrodes* verwandelt werden."—J. W. D.

Réaumur's figures, however, are not very specialized in detail, and although his account of the life-history of the insect is very interesting, yet his description of the insect itself is not sufficiently characterized to enable us to identify with precision the species which he describes. We must, therefore, refer to more modern writers for assistance in the determination of the species under consideration. Westwood (Int. Class. Ins., ii, p. 443), describes only one species of one genus, viz., *Aleyrodes chelidonii*, and he mentions that the wings have only one strong central nerve, pointing out that Burmeister is incorrect on this point in his figure (1 and b. d. Ent., ii [i], Taf. ii, fig. 7). I note that both of these authors mention the species as having antennæ of six joints, and Burmeister (*ib.*, p. 82) describes the 2nd joint as very long, 3rd, 4th, and 5th equal. Curtis (*op. cit.*) describes his species, *A. cocois*, as having 7-jointed antennæ, of which the 2nd is the longest. Now, in both of the species under consideration, it is the 3rd joint which is the longest, and which is, as Burmeister described his 2nd, *very* long. I should suppose that both Burmeister and Westwood did not count the basal joint when describing the antennæ as 6-jointed, and then in that case the 2nd joint would really be the 3rd. But Curtis, while describing the antennæ as 7-jointed, still says that the 2nd is the longest, so that, as he obviously did not count the basal joint, the antennæ of his species would really have had eight articulations.* I have experienced considerable difficulty with the antennæ of the dried specimens sent to me, for they were nearly all broken, and it was only in one or two instances that I was able to preserve the antennæ in a complete state. They appear to me to consist of seven joints, of which, undoubtedly, the 3rd is much the longest.

With reference to *Aleyrodes cocois*, Curtis says (*l. c.*):—

"There is a little white mealy fly, which sometimes infests the cabbages, and an allied species has been sent from the West Indies, which differs from it in its structure and economy. * * * On carefully examining the leaves of the cocoanut it is evident there are two distinct insects upon the under-surface, an *Aleyrodes* and a *Coccus*. They adhere to the under-side of the leaf, and are surrounded by a white cottony or resinous powder; both sexes of the *Aleyrodes* at rest, and with their wings closed, are exhibited of their natural size on a portion of the leaf (fig. 1), and also some oval animals producing the white powder in abundance from the margins of the sides, and these I suppose are the larval state of the *Aleyrodes*. There are also numbers of white linear cases, as shown at fig. 5, which I consider to be the pupa of a male *Coccus*; indeed, I found one of the perfect insects sticking

* *c. f.*, Ent. Mo. Mag., xxiv, p. 265, for a summary of various authors' statements of the number of joints in the antennæ of *Aleyrodes*.—J. W. D.

to the surface. At fig. 2, I have represented the under-side of one on the leaves: it is oval, concave, ochreous, and shining, with six minute legs and ventral rings, like a female *Coccus*, but I could not detect any proboscis or antennæ. I must observe, however, that the objects had all suffered from extreme pressure and great heat, and it is not unusual for the proboscis to be broken off in removing such animals from the surface on which they are feeding."

It will be observed from the above quotation that Curtis found a male *Coccid* in company with the *Aleyrodes* from the West Indies, and it will be seen from what I have said that I also found male *Coccids* in company with *Aleurodicus* on *Richardia* from Demerara.

I have now come to the conclusion, with which I think Mr. Douglas concurs, that the smaller of the two species which he sent me, that is, the one found on the cocoa-nut, is the same as the *Aleyrodes cocois* of Curtis, and the larger species found on *Anona* and *Richardia* is new.

Now, as the neuration of the wings, and the structure of the genital organs of the male, are different from any species of the genus *Aleurodes*, and as we have two species before us both possessing these same characteristics, it is thought better to establish a new genus to include these two species, and Mr. Douglas has suggested the name *Aleurodicus*, which I propose to adopt.

I should mention that Curtis (*l. c.*), with reference to his species, says:—

"The winged specimens are larger than any of our British *Aleyrodes*, and from the neuration of the wings being different, as well as from the remarkable anal forceps of the male, this insect might with great propriety be separated from the genus *Aleyrodes*." Signoret (Ann. de la Soc. Ent. de France, 4 série, Tome viii, p. 399 [1868]), quoting Curtis, also says:—"Ainsi il semble bien positif que c'est un *Aleurodes*, qui paraît extraordinaire et se distingue de toutes les autres espèces par l'innervation des élytres."

The larva of both the species presents some very interesting features. Four large, compound, funnel-shaped, glandular organs (fig. 10) on each side of the abdomen of the insect exude rods of a white silky flocculent substance, and towards the posterior margin four other smaller and more simply constructed glands secrete a similar substance, which does not, however, take the form of rods, and this substance is also exuded from the entire margin of the insect, from the marginal tubular glands (fig. 12). There are also numbers of small cœcal glands on the disc on the body, which also, I think, exude a white flocculent substance, so that the insect in its larval state presents an appearance something as shown in fig. 1.

ALEURODICUS, Doug., *n. g.** (Pl. i).ALEURODICUS ANONÆ, *n. sp.*

Larva. Oval, depressed, ochreous. Longest diameter, 1.25 mm. Antennæ apparently only 2-jointed, the 2nd long and annulated. Legs short, stout, tarsus with one claw only. Four lateral, infundibuliform, compound spinnerets on each side, and posterior to these, two more simply constructed and smaller secreting glands on each side, also one on each side anterior to the first pair of legs. Labium one-jointed, prolonged. Labrum quadrilateral. Mandibular organs short, with the maxillary setæ long and fine (fig. 2). Anus large, with long framework of colon easily distinguishable.

♂ and ♀ adult. Length, 2.25 mm. Antennæ long, 7-jointed; basal joint short; 2nd, longer; 3rd, very long; 4th and 5th, sub-equal; 6th and 7th, shorter. Legs long; the posterior pair considerably longer than the others. Tarsus 2-jointed; in the posterior pair of legs the first joint of the tarsus is the longest, in the others equal. Two claws. Tibia and tarsus pinnate. One stout spine at junction of coxa with trochanter. Several small, stout spines at junction of tibia and tarsus. Head inserted. Mesonotum chitinous, well developed. Scutellum, a pair of pyriform plates. Wings white, ample, broad; anterior, incumbent, length, 3 mm.; posterior, length, 2 mm. (fig. 3); strong central nervure bifurcated near the apex; branch nervure proceeding from near the base of the central nervure. Genital organs of female bivalvular, and between the valves is situated the ovipositor (fig. 7). In the male the valvular organs are modified in the form of a forceps, between which lies the penis (fig. 4). On the last segment of both sexes are two external processes.

Habitat: *Anona muricata* and *Richardia pacifica*, Demerara.

ALEURODICUS COCOIS.

Aleurodes cocois, Curt., Gard. Chron., 1846, p. 284; Signoret (Ann. de la Soc. Ent. de France, 4 série, Tome viii, p. 399 [1868]).

This having been described by Curtis, and translated into French by Signoret (*l. c.*), it is unnecessary to give a further description, but I should mention that the only difference I see between it and *Aleurodicus anonæ*, described above, is in the smaller size and the more diaphanous wings of the imago. This insect only measures 1.5 mm., and the thorax is not so chitinous and well developed as that of the *A. anonæ*, although the structure is the same.

Habitat: cocoa-nut palm only, Demerara.

I have only to add that Mr. McIntire kindly copied the description of *A. cocois* from Gard. Chron., and Mr. Douglas sent me Signoret's observations, for I had neither of the works necessary at my disposal.

* *Aleurodicus*:—Characters in general as in *Aleurodes*; differs in having the median nervure of all the wings strongly bifurcate at the apex, instead of being simple; in the structure of the male genitalia, and in the characteristics of the larva, as stated.—J. W. D.

EXPLANATION OF PLATE I.

- Fig. 1.—Larva of *Aleurodicus anonæ*, n. sp., surrounded with white secretion.
 „ 2.—Mouth organs of same: *a*, mandibular; *b*, maxillary setæ; *c*, labium;
d, labrum.
 „ 3.—Imago, same species, ♀. × 22.
 „ 4.—Genital organs of male: *a*, penis.
 „ 5.—Posterior leg of imago.
 „ 6.—Labium of same.
 „ 7.—Genital organs of ♀ imago: *a*, colon.
 „ 8.—Larva, deprived of the white secretion. × 22.
 „ 9.—Leg of same.
 „ 10.—Lateral funnel-shaped secreting gland of same.
 „ 11.—Anus, colon and ilium of same.
 „ 12.—Marginal secreting glands of same.

Villa Nova da Gaya, Portugal:
 December, 1891.

DESCRIPTION OF THREE NEW SPECIES OF THE GENUS
PHANÆUS, MACLEAY.

BY B. G. NEVINSON, M.A., F.Z.S.

PHANÆUS FLOHRI, n. sp.

Dark blackish-blue. Clypeus entire, rugosely punctate. Head horn long, erect, recurved at the apex, incrassate just above the base, strongly punctate. Thorax with the anterior angles sharp, slightly produced; the sides minutely granulate, faintly flushed with green; the disc quite flat, sparsely vermiculate-granulate, with no tubercles or elevations, having nearly circular margins, the marginal carinæ elevated at their bases, forming two blunt prominences, between them a shining, scarcely punctate, triangular space, with a shallow central sulcus, and enclosing two indistinct basal foveolæ. Elytra striate, the striæ foveolate at their bases, interstices broad and flat, minutely punctate. Pygidium dark blue, closely punctate. The under-side blackish-blue, the metasternum shining, closely punctate, with a central sulcus and two shallow basal impressions. Anterior tibiæ tridentate. Pubescence and antennæ dark piceous. Long., 21 mm.

Mexico, Jalapa (*Flohri*).

Mas effem.—Head horn produced to a sharply pointed tubercle. Thoracic surface strongly punctate, with a very small circular disc just above the anterior margin, and two distinct basal foveolæ.

Female.—With a strong carina on the vertex of the head, the usual three tubercles thereof barely indicated. Thorax strongly punctate, with a broad central prominence, limited in front by a faint carina, and with a depression, nitid and more sparsely punctate on either side. A distinct impression runs from the carina to the base, where there are two rather large foveolæ. The striæ of the elytra in the undeveloped males and in the females are rather broader than in the perfect male, the

interstices therefore rather narrower, but still very flat on their summits. This difference in striation is to be observed in other species, *e. g.*, *Endymion*, Har., and *Pyrois*, Bates.

On the whole I am of opinion that it is convenient to retain the name *Oxysternon* suggested by Castelnau (Hist. Nat., vol. ii, p. 82, 1840) for the group of *Phanæi* characterized by the spiniform prolongation of the metasternum, coupled with a scutelliform lobe at the middle of the basal margin of the thorax. Hope was the first to separate them (Coleop. Man., p. 51, 1837), but under the already occupied generic name of *Sternaspis*. Lacordaire, on the other hand, does not deem these characters sufficient for generic distinction; but having examined and dissected numerous examples, it appears to me that this is a very well defined little group, having a characteristic facies in both sexes, quite worthy of a separate name. The two species here described fall naturally into this group.

OXYSTERNON MACLEAYI.

Head black, with a metallic-green patch in front of the eyes; clypeus slightly emarginate, rugosely punctate. Head horn erect, rather short and slender. Thorax smooth, shining green, anterior angles hardly produced; centre with broad, somewhat bilobed, excavation, bordered laterally by triangular laterally compressed elevations, the apices of which, broadly black, are slightly incurved; the basal portion connecting these elevations is smooth, flat, and black in colour. The excavation, and those places generally where the dark colour meets the green, usually flushed with orange or carmine. A strong black carina runs on each side from the lateral margin to the base of the elevations. Elytra purplish-black, with metallic-green margins, strongly striate, the interstices narrow, convex, and minutely punctate. Pygidium brilliant green, closely punctate. Under-side entirely purplish-black. Metasternum black, with long anterior spine, smooth, with very minute punctures; central sulcus ill defined, sometimes flushed with red or green at its lateral margins. Femora and tibiæ black. Anterior tibiæ bluntly tridentate. Pubescence dark fulvous. Antennæ bright fulvous.

Female with simple straight carina on head. Thorax broad, green, with a slender, slightly trituberculate carina above the anterior margin. Behind the central tubercle, which is the largest and most advanced, and on either side of the carina, is a shallow depression. Centre of thorax occupied by a large black macula of varying form, sometimes nearly covering the entire surface. Anterior tarsi very slender, with two long apical bristles.

Long., 17 mm.

MacLeayi, Reiche, *in litt.*

Para and Amazons generally.

OXYSTERNON PTERODERUM.

Dark bluish-green. Clypeus slightly emarginate, with a blackish border, coarsely punctate; on the vertex is a smooth quadrate plate, sparsely punctate, bordered in

front by a feebly raised carina. No trace of horn in any of the eight specimens seen by me. Thorax very shining, with fine but distinct punctures. The anterior two-thirds occupied by a broad, and in the middle very deep, excavation, from within which on either side near the lateral margin rises a lofty, laterally compressed, bluntly triangular elevation, the apex of which is slightly incurved. The centre of the excavation is occupied by a slender carina running from the base to the anterior margin, which is slightly raised. Anterior angles of thorax sharp and rather produced. Elytra distinctly punctate-striate, interstices broad and flat, minutely punctured. Pygidium dark green, sparsely punctate. Under-side blackish-green. Metasternum smooth, but with a few coarse punctures at its lateral margins; a slight central sulcus; anterior spine very long. The prosternal ridge terminates in front in a minute sharply pointed spine. Femora blackish-green; tibiæ black, the anterior pair bluntly tridentate. Antennæ piceous, with the basal joint very long. Pubescence dark piceous, almost black. Long., 16 mm.

Pteroderus, Reiche, in litt.

The specimen here described was kindly lent me by Dr. Sharp. It is now in the collection of Mons. R. Oberthür. The label on this example states that it was found at Monte Video, but the majority of those that have come under my notice have been from much further north, Espiritu Santo and Rio Janeiro.

6, Tite Street, Chelsea:

December, 1891.

ANNOTATED LIST OF BRITISH TACHINIIDÆ.

BY R. H. MEADE.

(Continued from page 20).

22.—TACHINA, Mgn.

Gen. ch.—Eyes nude, or finely pubescent, rather widely separated in both sexes, but nearer together in the males than in the females; forehead not usually very prominent; facial angle mostly straight; antennæ nearly drooping, with the second joint elongated, and half, or rather more than half, as long as the third joint; arista bare, and usually thickened for half its length; facialia bare, or only ciliated along their lower halves with short fine bristles; cheeks nude; fronto-orbital setæ usually extending half way down the face; abdomen mostly conico-elliptical in the male, ovoid in the female, and either with or without discal setæ on the middle segments; wings with the fourth longitudinal vein usually bent at a sharp angle, and often furnished with a spurious, or nearly spurious, cubital appendix.

The species are mostly of a middle size, of a greyish-black colour, and marked on the thorax and abdomen in a very similar manner to those in the genus *Exorista*.

- 1 (22) Legs black.
- 2 (16) Palpi yellow or red.
- 3 (14) Wings with an appendix.
- 4 (11) Scutellum partly or wholly rufous.
- 5 Middle abdominal segments without discal setæ.
- 6 (9) Face generally luteous.
- 7(8)(10) Frontal stripe narrower than the sides of the frontalia, and the facial setæ reaching nearly up to the fronto-orbital ones...1. *larvarum*, L.
- 8(7)(10) Frontal stripe equal in width to the sides of the frontalia, and the facial setæ at some distance from the fronto-orbital ones...
2. *noctuarum*, Rnd.
- 9 (6) Face generally white.
- 10(7)(8) Frontal stripe wider than the sides of the frontalia, and the facial setæ reaching quite up to the fronto-orbital ones 3. *latifrons*, Rnd.
- 11 (4) Scutellum black or grey.
- 12 (13) Middle abdominal segments with discal setæ 4. *rustica*, Flm.
- 13 (12) Middle abdominal segments without discal setæ 5. *erucarum*, Rnd.
- 14 (3) Wings without, or with a very slight, appendix.
- 15 Thorax blue-black and glistening, with white reflections...
6. *angelicæ*, Mgn.
- 16 (2) Palpi black.
- 17 (20) Abdominal segments marked with straight black and white transverse bands.
- 18 (19) The white abdominal bands very narrow 7. *brevipennis*, Mgn.
- 19 (18) The black and white bands nearly equal in width 8. *morosa*, Mgn.
- 20 (17) Abdomen tessellated with brown and black patches, which form irregular transverse bands 9. *agilis*, Mgn.
- 21 The first posterior cell ending close to the tip of the wing, or quite, closed 10. *hortensis*, Mgn.
- 22 (1) Legs with the tibiæ rufous 11. *tibialis*, Flm.

T. LARVARUM, L.

Sides of frontalia and face mostly luteous; frontal stripe narrower than the sides of the frontalia; fronto-orbital bristles extending quite half way down the face; facial bristles* reaching up to within a short distance of the former; peristome armed on each side behind the vibrissæ with a row of bristles extending backwards; palpi yellow; antennæ black, with the second joint sometimes rufous at the end, and about two-thirds of the length of the third joint, which is often thickened; thorax and abdomen clothed with grey pubescence, which is mostly luteous, the former is marked with four longitudinal black even stripes, and has four external dorso-central bristles behind the transverse groove; the latter has the first segment black, and

* These are the oral bristles of Rondani and Schiner ("Mundborsten"), they are on the edges of the facialia.

the others tessellated with black and grey, so as to form irregular transverse bands, the middle segments are without discal setæ, and the second one has usually only two bristles on the margin; scutellum red or yellow; wings with a spurious appendix, the apical cross vein curved, and the outer cross vein sinuous.

This well known insect varies greatly in size,* colour, and other characters, and has, therefore, been divided into a number of different species; several of these, as *T. fasciata*, Fln., *T. flavescens*, and *T. præpotens*, Mgn., are no doubt only varieties of *T. larvarum*, but Rondani has described some others, which show slight differences of structure, and may, therefore, be looked upon as distinct species; two of these I have found, and shall include in my list, briefly pointing out the characters by which they differ from the type of the group (*T. larvarum*).

T. NOCTUARUM, Rnd.

The only points of difference between this and the preceding seem to be that the size is usually rather smaller, the frontal stripe is as wide or wider (in the male) than the sides of the frontalia, instead of being narrower, and that the facial setæ do not extend so high up towards the fronto-orbital ones. I have four specimens of this fly, all of which were bred from *Odonestis potatoria*.

T. LATIFRONS, Rnd.

This species differs from *T. larvarum* by having the face and pubescence usually white and cinereous, instead of luteous; by the frontal stripe being wider than the sides of the frontalia, by the eyes in the male being rather more widely separated, and by the facial setæ extending higher up, reaching quite to the level of the end of the fronto-orbital ones, or even a little above them. I received a male of this species from Mr. Bignell, bred from *Zygæna filipendulæ*, and a female from Mr. Fitch, reared from *Liparis chrysorrhæa*.

T. RUSTICA, Fln.

This is very similar in general appearance and characters to *T. larvarum*, but differs by having the scutellum black. The face is luteous; the palpi are yellow; the frontal stripe is narrower than the sides of the frontalia; the fronto-orbital and facial bristles nearly meet; the antennæ have the second joint about one-third shorter than the third in the male, and almost as long in the female; the outer dorso-central thoracic bristles are three in number behind the transverse groove; the second abdominal segment has four setæ on the margin, and two on the disc, and the third segment has four bristles on the disc; in other points it resembles *T. larvarum*. Not common; I received one from Mr. Brunetti, and another from Mr. Coryndon Matthews.

T. ERUCARUM, Rnd.

This species is very similar to the last, and is probably a variety of the same. I have only seen one specimen, which I captured in Oxfordshire, it resembles *T. rustica* in the scutellum being black, and in having three outer dorso-central thoracic bristles; it differs, however, in having no discal setæ on the second abdominal segment, though four are present on the third; the facial setæ are also more distant

* From 9—14 mm.

from the fronto-orbital ones; the arista is thickened for a longer distance, and in my specimen the cubital appendix on the wings is very long and distinct, being true, and not spurious. Rondani says that this species is very variable, and has been described by Macquart under several different names, as *T. angusta*, *T. angustifasciata*, *T. flavicaliptrata*, *T. cæler*, and *T. pusilla*.

T. ANGELICÆ, Mgn.

Forehead prominent, frontal stripe equal in width to the sides of the frontalia, piceous or black, with grey reflections; fronto-orbital bristles extending half way down the face; facialia almost bare, there being only a few short setæ placed above the vibrissæ; face white, with black reflections; antennæ with the third joint about twice the length of the second in the male, and about one and a half times in the female; palpi rufous; thorax glabrous, blue-black, with white patches and reflections, marked with four narrow stripes, the middle pair of which are nearer to each other than to the lateral ones, and having four outer dorso-central setæ behind the transverse groove; scutellum blue-black; abdomen elliptical, the first ring black, the front halves of the other rings glistening bluish-white, and the hinder halves surrounded by a shining black band; there is also a narrow, black, dorsal, longitudinal stripe, and setæ both on the disc and edges of the segments; the ventral surface is shiny black; wings brownish, with straight apical and outer cross veins, and a small costal spine. Rare; in Mr. Dale's collection.

T. BREVIPENNIS, Mgn.

Head with forehead prominent, the eyes widely separated in the female, with the central stripe wider than the sides of the frontalia; face white, with black reflections; antennæ grey, with the third joint a little longer than the second; fronto-orbital bristles extending to the end of the second antennal joint, where they spread out into an irregular patch; facialia almost bare; palpi black;* thorax blue-black, covered with grey pubescence, marked with four moderately wide stripes, and having four external dorso-central setæ behind the groove; scutellum black; abdomen convex, shiny black, with the first ring quite black, and the others encircled with a narrow white ring on their front margins, and having setæ both on the disc and edges; wings greyish, with straight cross veins, and a short and rather indistinct spurious cubital appendix.

I have only seen one female specimen of this rare species, which I captured near Buckingham in 1873.

T. MOROSA, Mgn.

Head with the eyes a good deal wider apart in the females than in the males, frontal stripe wider than the sides of the frontalia in the latter, and equal in width in the former, in which sex the sides are shining black; antennæ grey, with the third joint about twice the length of the second in the male, and rather shorter in the female; arista with the basal half strongly thickened; palpi black, with the tips pale in some specimens; fronto-orbital bristles reaching the middle of the face; facialia almost bare; thorax blue-black, with front and sides grey, and marked with four narrow black stripes; scutellum grey; abdomen shining blue-black, marked in

* The points are piceous in my specimen.

a very similar manner to that of *T. brevipennis*, only the white bands are much wider; there are setæ both on the disc and edges of the segments; wings greyish, with both the apical and outer cross veins curved. The females of this species are not uncommon, but I have only seen one male, which is in Miss Decie's collection, this sex was not known to Meigen.

T. AGILIS, Mgn.

Head with the eyes rather near together in the male; facialia ciliated for about one-third of their length; antennæ with third joint from one and a half to twice the length of the second; arista thickened for only one-third of its length; palpi black; thorax brownish-black, with front and sides white, marked with four rather indistinct black stripes, and armed with three external centro-dorsal bristles behind the groove; abdomen setose, tessellated with brown and grey patches, which form rather indistinct transverse bands on the segments, which are armed with setæ on both the disc and edges; scutellum black; wings greyish, having the apical cross veins long, oblique, and straight, and the other cross veins sinuous.

Rare; I have not seen the female. Miss Decie has a specimen in her collection which I named *T. bibens*, Mgn.; I now think that *T. bibens* and *T. agilis* are the same species.

T. HORTENSIS, Mgn.

Head with face white; antennæ with third joint twice as long as second; fronto-orbital bristles only extending down one-third of length of face; facial bristles reaching half way up facialia; palpi black; thorax covered with pale grey pubescence, and marked on front margin with four black stripes; outer dorso-central bristles three behind the groove; scutellum black; abdomen blackish-grey, first segment unmarked, others with an even whitish band round the front margin of each, and with setæ both on the disc and edges; wings with apical cross vein straight, with a blunt angle at the base, and ending near the apex of the wing, first posterior cell nearly, or quite, closed. Rare; one female is in Miss Decie's collection: the male has not been described.

T. TIBIALIS, Fln.

Head with forehead rather prominent, frontal stripe wide and rufous, or piceous; fronto-orbital bristles only extending as far as the root of the second antennal joint; antennæ with the second joint two-thirds the length of the third; facial bristles few; vibrissæ numerous; palpi black; thorax ash-grey, with three stripes, central one wide, and sometimes divided by a fine line; outer dorso-central setæ three in number behind the groove; scutellum black; abdomen grey, with black reflections and tessellations, and a narrow black band on the hinder edge of each segment (except on the first, which is quite black); setæ on the disc and margins of the rings; sides of second and third segments slightly rufous in the male; wings yellowish, with apical cross vein nearly straight, and ending near the tip of the wing, outer cross vein sinuous; legs black, with the tibiæ red or yellow, fore tarsi of the males with long claws and hairs. Not uncommon; it has been bred by Mr. Billups from *Tanessa urticæ*.

(To be continued.)

75

STYLOPIZED BEES.

BY FREDERICK V. THEOBALD, B.A., F.E.S.,

Cambridge University Extension Lecturer on Injurious Insects, &c.

Mr. R. C. L. Perkins' paper on Stylopized Bees shows us how often observers disagree upon very important points. Shuckard, he says, tells us that the larvæ of *Stylops*, feeding within the body of their host, live upon the *viscera* and render the bee abortive, by destroying the ovaries, since it is chiefly found to attack the female bees. In the next paragraph Mr. Perkins says, "I never found the female more liable to attack than the male, nor does the first part of his (Shuckard's) statement agree with my observations on such British species as I have examined."

While Mr. Perkins' observations disagree, mine *agree to a certain extent* with Shuckard's. In 1886 and 87 a large number of stylopized bees came into my hands; these were of a somewhat rare species, *Andrena lapponica*. In the two years mentioned they were very abundant in four localities near St. Leonards-on-Sea, but were extremely local. In 1887 I netted 180 specimens, of these 105 were stylopized, but I only retained a few of each of the normal and infested ones (in spirit). In 1888 they were decidedly scarcer, the climatic conditions being much the same and the colonies undisturbed; this time I captured only 60 specimens, 54 being badly attacked. Some of these were also put into spirit, and not "unearthed" until 1890, when my suspicion of the destruction caused by this parasite was further aroused, by their disappearance in 1889 and 90; in 1889 a few were taken, but in 1890 they had entirely gone. I naturally concluded that they had been exterminated by the *Stylops* destroying the reproductive organs, as is done by some parasitic *Crustacea*; but not satisfied with this, I examined my spirit specimens on my return to Cambridge.

Eight out of sixteen examined had their viscera "crippled" to such an extent that reproduction was impossible in both ♂ and ♀, supposing the sexual products had been developed. Six out of the eight were ♀s; two had two *Stylops*, the remainder one. The parasites in all eight cases had so pressed down the *colon* and *chylific ventricle* that the *vagina* was flattened upon the ventral surface, the *spermatheca* entirely absent, as were likewise the *appendicular organs*. The *ovaries* were also flattened at their posterior extremities, and only in one out of the six ♀s was there any indication of developing ova in the tubules, and these, if they reached maturity, were useless, as

they could never find an exit. The two ♂s were also of no reproductive use, although the external appearance of the *testes* and *vesiculæ seminales* was normal; but no signs of the curious spermatozoa were to be found in any stage of formation; the *ductus ejaculatorius* was nearly solid throughout its whole length.

The wall of the alimentary canal under the parasites was extremely thin; this is no doubt due to the parasites, which gain their nourishment by osmosis from the digestive tract of the host.

The reason of the large size of these stylopized bees is simply this, the extra nourishment taken by the parasite or parasites necessitates the enlargement of the digestive and secretory organs, and as this can only take place in a ventral direction, it causes abnormal pressure on the sexual organs, which causes their abortion.

As to the number of parasites in each host and the proportion of sexes infected, the two tables, taken from many I have (all tending to the same conclusion), show that the ♀s suffer most from the attack, as Shuckard says, and also that one parasite to each host is the general rule.

ANDRENA LAPPONICA.

54 specimens.

2 ♀s with 3 <i>Stylops</i> .			
6 ♀s	2	♂s	2
3 ♂s	2	♀s	2
25 ♀s	1	♂s	1
18 ♂s	1	♀s	1
= 33 ♀s and 21 ♂s.			

ANDRENA NIGROÆNEA.

40 specimens.

3 ♀s with 3 <i>Stylops</i> .			
1 ♂	3	♀s	3
3 ♀s	2	♂s	2
5 ♂s	2	♀s	2
16 ♀s	1	♂s	1
12 ♂s	1	♀s	1
= 22 ♀s and 18 ♂s.			

A statement by Prof. Perez in his memoir, "Des effets du Parasitisme des *Stylops* sur les Apiaires du genre *Andrena*," referring to the appearance of stylopized bees with no apparent *Stylops*, that the parasite may be *hidden* in the abdomen, or may be present in the larval stage of the bee, led me to examine two apparently stylopized specimens of *atriceps*; in both of these was a ♀ *Stylops* deeply embedded in the viscera.

Naturally we should expect the larva of the *Stylops* to destroy the reproductive *germ cells* in the *maggot* of the bee; this would account for the curious changes in stylopized bees (the ♂ assuming the appearance of the ♀, and *vice versa*), and yet Mr. Perkins finds ova and spermatozoa in course of development in the infected specimens. What, then, in this case, can the changes produced by stylopization be due to?

From my own observations at the University Laboratory, I was unable to find any traces of ova or spermatozoa (except in one case, where immature ova were found) in accordance with what we should expect. It does not follow that the genital organs themselves need be affected, but the *germ cells* that give rise to the germinal layers of the sexual organs. From the observations I have made I gather the following results:—

- I.—The ♀ *Stylops* gains its nourishment from host by osmosis, and this causes the alimentary canal, in part, to become abnormal.
- II.—The abnormal canal is forced upon the sexual organs, and renders them in whole or *part* abortive.
- III.—That the ova and spermatozoa are not *generally* present in infected imagos.

Kingston-on-Thames :

January, 1892.

OVIPOSITION OF *ADELA VIRIDELLA*.

BY T. A. CHAPMAN, M.D., F.E.S.

In May, 1890, I got several ♀ *Adela viridella* and confined them on sprays of oak in blossom, with the result that six or eight eggs were laid by the moths in the petioles of the blossoms, but so that half the egg was included and pinched in the incision made by the moth, the other half protruding as a pearl-like bead outside.

Although the analogy of *fibulella* and *rufimitella* suggested inflorescence as the necessary nidus, and the impression I had that oak was the proper food was very strong, I felt it difficult to accept this result as a normal one, and as a matter of fact all these eggs perished without coming to anything. It was further pointed out to me by Dr. Wood that in the head-quarters of *viridella* in this district the oaks rarely blossom or fruit, being undergrowth or very young trees.

Last year, on June 3rd, Dr. Wood and myself visited the habitat of *viridella* with a view to take a further step, if possible. It was late in the afternoon before we reached the ground, and very dull, and we saw hardly one ♂ *viridella* on the wing. After sundry unsatisfactory researches, we took to shaking certain young oak trees, say 4 or 5-in. in diameter of stem, and 20-ft. high; out of each of these usually one or two ♀ *viridella* flew with a steady flight, and in a somewhat downward direction, so that we each took home some eight or ten specimens. They came usually from quite the tops of the trees; only a few ♂s were disturbed by this process.

This experience seemed strongly to confirm the idea that the ♀ *viridella* had special business on the upper portions of these oak trees. We accordingly obtained some small branches from the top of one, and on these I confined the moths I brought home. The next day (June 4th) I saw three several moths laying their eggs, and doing so in a manner that convinced me they were now doing so in the ordinary and proper way. The moth climbs up the petiole of a leaf, proceeds some half an inch along the midrib underneath, and then pierces it with the spear that arms the ovipositor and deposits the egg, proceeding then a tenth of an inch or so and repeating the process. The whole operation takes only 20—25 seconds, and is accompanied by thrusting movements that agitate the whole moth.

The sample of oak thus brought home and provided for them was very short in the shoots, but the leaves were of a very robust succulent character, about 3 to 4 inches long, and the petioles and midribs were especially large and soft, remarkably so as compared with equally young and juicy leaves from this neighbourhood. This may account for the aberrant procedure of last year, and for *viridella* being local. On dissecting one of these midribs I found it to contain three eggs within a very short distance. The midrib contained a woody centre, and a very succulent bark about $\frac{2}{3}$ mm. thick, and the eggs were laid in this bark in a slanting position, just touching or against the wood, and with about as great a thickness of bark over them as they themselves occupied. I found it impossible to be sure of any trace of wound in the epidermis, although I had seen the moth pierce it only a few minutes before. Yet the egg itself occupies a comparatively large space, and must be passed through a very appreciable opening, and the space it occupies must be made by breaking down a number of cells of tissue, and probably the thrusting movements of the moth I observed were the effective agents in doing so.

By searching a week later on the trees, I succeeded in finding one egg laid in a precisely similar manner, thus confirming absolutely that this is the natural locus of oviposition of this species. We searched earnestly both then and later for signs of the young larva mining the midrib, but without finding a trace, though we did find cicatrices suggesting that the larva had dropped out very shortly after hatching, and without having done anything, unless perchance to eat a direct way out, and swallow some sap on the way. We entertain little doubt that this is the actual procedure, the rest of the larval life being spent on the ground. I was unable to maintain the freshness of the leaves

in which the eggs were laid in captivity sufficiently long to determine this point.

I find in "Le Naturaliste" for 1889, a paper by M. P. Chrétien on the life-history of *Nemophora Panzerella*, by which it appears that he had determined that that species pierced the succulent stems for oviposition, thus anticipating Dr. Wood's and my own observations in *Micropteryx*. He also appears to be well acquainted with the larva of *viridella* on the ground, but had not determined its oviposition. His account of *Nemophora* shows that its larva leaves the egg-nidus at once, adding much force to our surmise that that is the case with *viridella*.

Firbank, Hereford :

January, 1892.

NOTES CONCERNING CERTAIN LOCAL BRITISH BUTTERFLIES.

BY HERBERT GOSS, F.L.S., &c.

MELITÆA ATHALIA.—I have taken it freely in various woods in East Sussex. In 1868, I found it in a clearing in one of these woods in such plenty that I netted over sixty specimens in an hour, frequently securing five or six at one stroke of the net from the flowers of *Euphorbia amygdaloides*. This was on the 3rd of June, and in the following year it was in equal plenty from the 8th to the 12th; but in 1875 it was not fully out until the 22nd of June, and was rather later still in 1885 and 1891. It occurs most commonly in the open spaces where the trees and underwood have been cut down two or three years before. In all the woods in which I have taken it, *Melampyrum pratense* grows abundantly, and, no doubt, serves as the food-plant of the larva. I have frequently seen the butterfly alight on the flowers of this plant, and also on those of *Ajuga reptans*, *Lychnis flos-cuculi*, and the woodspurge already mentioned. In one wood, *Lathyrus Nissolia*, a local vetch, is plentiful in some places, but I never saw *Athalia* settle on it. I never found it in any wood in the same spot in two successive years. The metropolis, as Mr. Tress Beale recorded, is changed every year. When caught, the insect sometimes feigns death by closing the wings and contracting the legs, as Mr. Beale says, but this is by no means its invariable practice; sometimes it is lively enough in the net. It often sits upon flowers with the fore-wings laid back over the hind-wings. Its time of emergence, as in other species of this genus, depends on the weather in the early spring. I have taken one or two as early as May 30th, and as late as July 12th.

MELITÆA CIXIA.—I first saw this species alive about the 8th of June, 1873, in a small cove under the Coast Guard Station at St. Lawrence, Isle of Wight. It was far from common, and excessively local. In 1878, on the 20th of June, it was plentiful at about a mile and a half west of the last named locality at the edge of the cliffs, and on grassy places sloping down to the beach. At this time the males were nearly over, but many of the females were still in good condition. The

flowers they principally frequented were those of *Anthyllis vulneraria*, *Lotus corniculatus*, *Hippocrepis comosa*, and *Ononis arvensis*. I have also seen them resting on several species of *Ranunculus* and *Hieracium*, and have noticed the female sitting, like male *Artemis*, with the fore-wings bent back over the hind-wings, but not often.

In 1882, it had disappeared from these two localities, but was plentiful further inland on a strip of waste ground, and in copses. The first specimens appeared as early as May 8th, and by May 20th the species was abundant. In 1883, it appeared equally early, and the last stragglers were worn by the 7th of June. I mention these dates to show how the species is affected by the climate during the winter and early spring.

In this more inland locality the favourite flowers were *Galium cruciatum* and *Euphorbia amygdaloides*.

This species seems to have entirely disappeared from the locality east of Sandown, Isle of Wight, where it was taken by Mr. Dawson in May, 1844.

THECLA PRUNI.—I found it plentifully in Barnwell Wold, Northamptonshire, and in other woods in that neighbourhood, 22 years ago. The season was an early one, and large numbers of this butterfly were flying round and settling on the flowers of privet (*Ligustrum vulgare*) in the woods. On June 19th, I netted over forty specimens in an hour. By the 22nd they were getting worn. In 1875, I reared several dozen specimens from larvæ obtained in Northamptonshire. The first emerged on June the 13th, and the last on June the 27th. In 1876 they were later, appearing from June 26th to July 3rd. It was a great luxury to me to see living specimens of this local butterfly walking about on the table when I was at breakfast. In 1890 not a specimen was to be seen on June 27th and 28th, but a week afterwards I heard that the species was just coming out. It sits upon flowers with its wings closed, and, besides the privet, frequents those of the wayfaring tree (*Viburnum lantana*).

STEROPES PANISCUS.—It is sometimes common in rides and open places in woods in Northamptonshire, and seems very partial to the flowers of *Ajuga reptans*, about which it is constantly buzzing. It is swift, and has a bright appearance when on the wing. I think that the last week in May is its time of appearance, in an average season. In 1891 I found it in fine condition as late as June 13th, but the majority of the specimens were females.

Surbiton Hill: December, 1891.

ON THE REARING OF *PACHETRA LEUCOPHÆA* FROM THE EGG.

BY W. R. JEFFREY.

It can hardly be expected that any notes on my *failure* to rear the larva of *P. leucophæa* through the winter of 1890—91 can be of much interest to the readers of the Ent. Mo. Mag., but as I intend giving the experience of others more successful than myself, it may be well to put them together before the year closes.

On the 7th of June, 1876, I found a fine specimen of this moth on the trunk of a birch near Ashford, as recorded in Vol xiii of this Mag., page 64. On the 2nd of June, 1890, I again met with the insect within half a mile of the same spot, this time also a ♀, but not in such fine condition as the first—however, the chance of obtaining fertile eggs was greater. Placing her in a glass cylinder in a flower pot

with some grass and a few beech leaves, she laid on the muslin at the top fifty-five eggs during the night of the 4th, and the next night sixteen more on a beech leaf. Calling to mind the difficulties others had experienced in trying to rear this larva, I resolved to increase the chances of success by distributing them. Accordingly, Dr. Chapman had ten, the same number being sent to two other well known Entomologists; while the sixteen eggs on the beech leaf were handed to my friend Mr. C. Viggers, of this place.

Dr. Chapman has already recorded elsewhere his mode of dealing with the larva, which, though somewhat artificial, was the most successful of all the methods tried, resulting in four fine moths during the first half of last March, which he most liberally presented to me, quite unexpectedly, and, as I kept many more eggs than he had, certainly undeservedly. The other gentlemen, excepting Mr. Viggers, failed, with myself, in getting the larvæ through the severe winter, though we had the pleasure of seeing them in their last handsome coats, so well represented by the late W. Buckler, and reproduced in the last volume of his figures published by the Ray Society. It is needless to describe the larva, it having been so well done already, but I may give a few particulars as to the dates of moulting.

The first egg hatched June 18th, 10 a.m., the bulk of the other larvæ out and eating egg-shells next morning about the same time. They were greyish, with black spots, and brownish heads, looped decidedly in walking, only twelve legs being at first developed: indeed, the two anterior pairs of ventral legs were not distinctly visible till after the second moult. June 25th and 26th, they were laid up on the spikelets of the inflorescence of the grass (*Poa annua*) for their first moult, in which position they were not very easy to see; one observed just left its skin behind at 10 a.m., the 26th, then very pale, but lines more distinct. July 4th, laid up for second moult, most began feeding again during July 6th. July 13th and 14th, third moult; 22nd and 23rd, fourth moult; August 4th, fifth moult, and one of the largest had moulted for the sixth time on August 25th, the others following in the course of the next fortnight. After September they did not do so well, and by the second week in November I had only five left to face the winter, and these eventually perished. My only consolation now was to go and look at those under the care of Mr. Viggers, who had fitted up a cage specially for them, making the surroundings as much like nature as possible, out of doors. There is little doubt they go on feeding at times in their native haunts all through the winter, as we often caught sight of them on chilly nights. Thus, on the 13th January, I saw five on the grass culms, being the first time any had been seen since the 9th of December, the hard frost intervening. The renewal of the frost sent them down again, but the more lasting thaw of the 20th of January woke them up again, and on the 23rd eleven were counted. After this they were to be seen on the milder nights, though in decreasing numbers, up to the middle of April. When they had all gone to the roots of the grass, we began to look anxiously for the moths, after the end of May, but only two appeared, and these not till the 23rd and 25th of June. As they were both males, the brood could not be continued.

A close scrutiny of the tree trunks in the locality last June was fruitless, as far as *P. leucophæa* was concerned.

Ashford: December 30th, 1891.

Curious food-plant of Anchocelis litura.—When in Essex the end of June I found in a garden at Great Saling some *Noctua* larvæ, which I did not recognise, feeding in the flowers of the showy Iceland poppies and other species. On reaching home I supplied them with flowers of *Papaver rhæas*, and also those of *Glaucium luteum*, which I happened to have in water brought up from the sea shore. I found they ate any of them, so did not try them with anything else. On September 20th a fine *A. litura* emerged, followed in a few days by two more. On ascertaining the species, I referred to the account of the larva by the late Wm. Buckler as given at p. 40 of Vol. ix of this Magazine, which is in his usual accurate style, the food-plants then tried (rose and bramble only) being so very different from what I found them on naturally, hence the value attaching to this note, if any. Of course roses abounded in the garden, but I did not pay any attention to them, being quite ignorant at that time of my larva and its history.—WILLIAM R. JEFFREY, Ashford : December 31st, 1891.

Substitute food for Phorodesma smaragdaria.—As larvæ of *Phorodesma smaragdaria* seem to have been taken in large numbers during the past autumn, it may enhance the chances of rearing more specimens of this beautiful insect to place on record the fact that the larvæ will feed up just as well on the common garden *Artemisia abrotanum* (locally known as "southernwood," "old man," or "lad's love,") as on its natural food, *Artemisia maritima*. I reared them from quite minute larvæ on this plant last year, and have now larvæ hibernating from eggs obtained from the moths bred in July, and which have tasted no other plant than *A. abrotanum*. The two plants must have very much in common, as larvæ of *Eupithecia extensaria* feed equally well on both, though they refused some other species of *Artemisia* with which I tried them. *P. smaragdaria* I tried with only *A. abrotanum*, and probably all *A. maritima*-feeding species would take to it.—GEO. T. PORRITT, Huddersfield : January 8th, 1892.

Callimorpha Hera not a Yorkshire insect.—It would be interesting to ascertain where the late Dr. F. C. Lukis obtained his information as to *Callimorpha Hera* having established itself completely, and since spread through large districts in Yorkshire, as quoted by Mr. Luff at p. 22 of the current number of the Ent. Mo. Mag., from a Guernsey Guide Book. Suffice it to say, I believe there is not an authentic record of the occurrence of a single specimen of the species in Yorkshire, either in an absolutely wild state, or even through such a supposed introduction as there detailed.—ID.

Noctua festiva and its varieties.—I have received from Mr. G. V. Hart, of Dublin, a series of *Noctua festiva* for examination, in which I find some peculiarities of interest. It appears that in the past season he found specimens of this species already badly worn quite early, before the end of June, in fact, and that these were followed by others in fine condition which remained on the wing through July, getting worn of course. On August 7th perfect and freshly emerged specimens again appeared, but these, instead of being of the ordinary size like the preceding, were small, and in this and all respects, of the form called *conflua*, formerly believed to be a distinct species.

There seems to be little doubt that these August specimens were the offspring of those which emerged and passed away so early in the summer, and also that their small size was the result of rapid feeding up. But their exact coincidence with Scottish var. *conflua* is most remarkable, since it appears among the Scottish hills as the representative of normal *festiva*, not as a second brood, while the var. *conflua* does not seem to have previously occurred near Dublin. I have before me Mr. Hart's *festiva* of previous seasons, they are quite normal, except that they do not quite equal in size the largest southern specimens.

Perhaps the most curious circumstance in connection with these small August specimens is that one of them differs from the rest in having more pointed forewings of a darker colour, being an exact representative of the darker Shetland variety, which at first sight looks so very different from the ordinary forms of *festiva*.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E. : December 14th, 1891.

Amphidasis betularia, var. *Doubledayaria*.—Perhaps it will interest you to know that your English *Amphidasis ab. Doubledayaria*, Mill., is spreading all over the Continent. During the last five or six years this black form has been recorded from about a dozen places in Holland and Germany. Formerly it had never been taken on the Continent. I can give you the following particulars. It was taken—

June 9th, 1884, near Hanover, 1 ♂, Aug. Hoffmann.

before 1888, from Dordrecht and Grave, Netherlands, P. C. T. Snellen.

before 1888, from Gotha, Thuringia, F. Kapp.

1888, from Melle, near Osnabrück, 1 ex. larva, T. Heydenreich.

1890, Aachen, 1 ♀, Rhineland, O. Wackerzapp.

1891, Rheydt, near Düsseldorf, 1 ♂, Rhineland, Püngeler.

1891, Düsseldorf, several specimens, Rhineland, Püngeler.

1891, Eutin, Holstein, 1 ♀, intermediate form, Aug. Hoffmann.

The form seems to come up the Rhine, so it is the more curious that I found the first specimen near Hanover.—AUGUST HOFFMANN, Eutin, Holstein : Dec., 1891.

[It is a matter of general knowledge, I think, that this singular melanic form of our common "pepper" moth was almost unknown thirty years ago, and that the first specimens caused quite a sensation in this country, also that in its special home in the hill districts of Derbyshire, Lancashire, and the adjoining counties, it has been increasing from year to year in proportionate numbers until it is now in some districts the predominant form.—C. G. B.].

Leucania extranea, Guen. (= *unipuncta*, Haw.), in the Isle of Purbeck.—I am delighted to be able to record the occurrence of this very rare species in the Isle of Purbeck, as I was fortunate enough to take a beautiful specimen at sugar in our shrubbery on the night of October 12th last. To judge from its condition, and the spot where it was taken, it seems highly improbable that it flew from any distance, and the sea at the nearest point—an indented coast-line, quite away from the track of any vessels—is 3½ miles away. It was one of those evenings when a good deal of courage is required to make up one's mind to turn out after insects at all, and I quite expected that it would be only a waste of time, as it was chilly (47° F.), compared with the previous evenings, with occasional torrents of rain. As it happened,

however, the moths found it quite impossible to resist the attractions of sugar, and there was a larger muster than on any night this autumn; of the more aristocratic kinds I got 2 *Anchocelis lunosa*, 2 *Epunda nigra*, 3 *Xylina rhizolitha*, and 7 *X. petrificata*, and it was one of those rare occasions when insects *keep on coming* to the sugar, and one has the pleasure of finding a good many fresh visitors at every round.—EUSTACE R. BANKES, The Rectory, Corfe Castle, Dorset: Dec. 15th, 1891.

Dasycampa rubiginea in the Isle of Purbeck.—Fortune has certainly favoured me this autumn, as by working the ivy bloom round our shrubbery I secured four grand *D. rubiginea*, all taken between 6 and 7.30 p.m., on November 13th, and another on the following evening: the latter was found sheltering under an ivy leaf during a regular deluge of rain. Although I have worked for the insect pretty regularly for many years past, the only other one I ever met with was taken in the shrubbery here on November 3rd, 1883.—ID.

Polyommatus Phlæas pupating under earth.—Not long since I was surprised to see a specimen of the above species in a breeding cage from which I had removed (as I imagined) all the pupæ. On turning up the earth, however, I was interested to find an empty pupa case completely covered by soil, and enveloped in a loose cocoon composed of particles of earth. All my other larvæ had turned to pupæ on the glass sides of the cage.—R. M. PRIDEAUX, 9, Vyvian Terrace, Clifton, Bristol: January 4th, 1892.

Butterfly Notes.—*Pararge Ægeria* in Dorset is by no means confined to woods, being common wherever there are trees and shade. It is particularly fond of stormy weather, appearing at Glanvilles Wootton in the wet summer of 1879 in the greatest abundance, but very sparingly in the dry summers of 1870 and 1887. It is generally on the wing by the middle of April, but I have earlier dates as March 15th, 1830, and March 25th, 1868, and I once bred one on March 7th, 1868. The latest date on which I have captured it is November 2nd, 1866. *Satyrus Semele* I have seen on the trunks of fir trees, feeding on turpentine. *Anthocharis cardamines* in some seasons appears in April, my earliest dates being April 2nd, 1854, April 7th, 1835, and April 15th, 1868. My latest dates are July 1st, 1875, July 6th, 1833, and July 16th, 1888. It has been recorded by Mr. Dell as being taken at Plymouth in 1862 as late as September. There is a noticeable distinction in the ground colour, the earlier examples being whitest, the later of a yellowish tint. *Leucophasia sinapis* I have seen in lanes clinging on to the *under-side* of leaves with wings pointed towards the ground. All other butterflies, I believe, rest on the upper-side of leaves. *Pieris napi* (female) I took at Lairg, in North Scotland, on June 14th, 1890, of a cream ground colour, resembling some examples of *rapæ*. *Pieris rapæ* I have taken of a cream colour in Portland, and likewise here; it appears to be the effect of heat. My earliest and latest dates of its appearance are February 17th, 1868, February 26th, 1871, March 6th, 1835, October 29th, 1873, October 18th, 1890. *Pieris brassicæ* was taken here on February 22nd, 1890. *Satyrus Janira* has a peculiar habit in stormy weather of forsaking the grass at evening and of retiring to roost on oak and other trees. The next evening it returns to the grass. My earliest and latest dates for it are May 28th, 1834, June 20th, 1870, October 11th, 1866, and

October 29th, 1860. *Hesperia Actæon*, my earliest and latest dates are May 31st, 1833, June 26th, 1877, September 5th, 1877, and September 13th, 1888.—C. W. DALE, Glanvilles Wootton: *January 1st*, 1892.

Stylopidae.—My father took *Halictophagus Curtisii* at Lulworth on August 15th, 1832, also at Portland on June 16th, 1840; *Elenchus Walkeri* at Glanvilles Wootton on June 11th, 1830, and at Cosmore Quay on July 27th, 1839; *Stylops Dalii* at Glanvilles Wootton on May 3rd, 1827, and May 23rd, 1827; *Stylops Kirbyi* at Glanvilles Wootton on May 12th, 1836, May, 1840, and May 7th, 1827. *Halictophagus* is supposed to be a parasite of *Halictus*; *Elenchus* of *Prosopis*; whereas *Stylops* is known to be on *Andrena*.—ID.

Exorista apicalis.—This rare fly I took at Vallay, North Uist, on June 18th, 1883.—ID.

A Chrysopa destructive to Coccids in New South Wales.—Mr. A. Sidney Olliff Government Entomologist for New South Wales, has sent me for identification specimens of a *Chrysopa*, the larvæ of which are found in great numbers eating the eggs of a species of *Pulvinaria* which is killing miles of "salt-bush," a shrub that often forms the principal food of sheep on the dry western plains at Wentworth, the junction of the rivers Darling and Murray.

The *Chrysopa* is *Ch. Ramburi*, Schneider, which appears to have a wide distribution, and is probably not attached to *Pulvinaria* in particular, nor to *Coccids* in general. In addition to Mr. Olliff's examples I possess it from Queensland (Rockhampton), South Australia (probably Adelaide, the late *Dr. C. A. Wilson*), West Australia (Geraldton and Carnarvon, *Mr. Meyrick*), New South Wales (Glen Innes, 3500 feet, *Mr. Meyrick*), and finally I have an example from the Marshall Islands in the Pacific (*Mr. G. F. Mathew*) that does not differ from others from Australia.

Chrysopidae undoubtedly play a large part in the destruction of small insects injurious to vegetation, and when found in sufficient numbers it should not be difficult to transport them from place to place when in cocoon. There can be little doubt that the occurrence of *Ch. vulgaris* in remote islands, &c., can be only accounted for by its introduction when in cocoon (or possibly in the egg-state) with shrubs and other plants.—R. McLACHLAN, Lewisham, London: *December 26th*, 1891.

Formica sanguinea at Shirley.—Twenty years ago *sanguinea* was a very common ant on the Shirley Hills, but, for the past five or six, it had disappeared, and I began to fear had been altogether driven from this, its nearest London home, by the armies of excursionists who now invade this charming spot on every Bank Holiday, for though a fighting ant, I fancy *sanguinea* is retiring in disposition, and objects to ginger beer, bands, and "three shies a penny." Last October, however, a patient search was rewarded by the discovery of one small colony as far from the holiday side of the heath as the ants could well get, and I was indebted for this success entirely to a worker of *Leptothorax acervorum*, which, by careful watching, led me some yards straight to *sanguinea*'s secluded retreat, in which I also found other workers of *acervorum*.

In 1868, in a nest of *sanguinea* at Shirley I found the following species, besides the usual *F. fusca*: *L. niger*, *L. flavus*, *T. erratica*, *M. ruginodis*, *M. scabrinodis*, *M. lobicornis*, *L. acervorum*, and *L. Nylanderi* (Entom. Annual, 1868), and the incident above recorded I think shows that *acervorum* is probably more of a constant resident than a casual visitor in *sanguinea*'s nest.—G. A. JAMES ROTHNEY, 15, Versailles Road, Anerley: *January 10th*, 1892.

Occurrence of Halictus cylindricus ♂ in April—In connection with Mr. R. C. L. Perkins' interesting remarks on stylopized bees in this month's Ent. Mo. Mag., the following may be worth recording. On April 21st, 1882, I captured at Penzance (and have now in my collection) a male *Halictus cylindricus*. The appearance of a ♂ so early in the year was a surprise to me, and I made a special note of it at the time, so that there is no doubt whatever about the exact date. The winter and spring had been unusually mild, and this individual (together with others, perhaps), had survived—a living exception to the rule that "the ♂ *Halicti* all perish at the approach of winter."—E. D. MARQUAND, Fermain, Guernsey: *January 11th*, 1892.

Cathormiocerus maritimus, Rye.—In the Bulletin Soc. Ent. France, 1891, p. cccxiii (Meeting of November 25th), M. Croissandeau records the capture, in considerable quantity, of *C. maritimus* at Roscoff, Morlaix Bay (Finisterre). They were obtained by sifting upraised sods of herbage in uncultivated ground. The only British locality yet known for it is the neighbourhood of Portsmouth. Bedel (Col. du Bassin de la Seine, vi, p. 235) records *C. socius*, Boh., from Finisterre; but, as has already been pointed out by Uhagon and others, his insect is probably *C. maritimus*, Rye.*—G. C. CHAMPION, 11, Caldervale Road, Clapham, S.W.: *December 18th*, 1891.

Æcanthus pellucens not a British insect.—Mr. Shaw, in his excellent Synopsis of British Orthoptera, published in this Magazine (1890, p. 169), allows *Æcanthus pellucens* a place in our list of insects (though with great doubt as to the propriety of doing so) on the authority of a specimen said by Stephens to have been taken many years ago by Haworth. Mr. Shaw was thus evidently unaware that this specimen had long since been summarily disposed of by Westwood, who states (Int. Mod. Class, i, p. 448), "*Æcanthus pellucens* . . . has been given as an indigenous species on the authority of a specimen in the collection of the late Mr. Haworth. Having, however, purchased the insect at his sale, I am able to state that the specimen has been *misnamed*, being in no manner related to the insect in question." It may, therefore, be concluded that *Æcanthus pellucens* has no claim of any kind to a place in our catalogue of native insects.—D. SHARP, Cambridge: *January 2nd*, 1892.

[As the specimen probably still exists, it should not be difficult to decide what it really is.—EDS.].

Myrmedobia tenella, Zett., and *distinguenda*, Reut.—Besides the characters given by me for the ♀ of the above species in our last number, I may mention two

* See Ent. Mo. Mag., xxv, p. 122.

other important ones which I omitted, 1st, the shorter 2nd antennal joint in *tenella*, which is about a third shorter than the apical joint, and secondly, the reflexed lateral margins of the pronotum in that species, which are quite simple in *distinguenda*.—EDWARD SAUNDERS, St. Ann's, Woking : *January 8th*, 1892.

Reviews.

DIE KÄFER VON MITTELEUROPA ; Erster Band. : by LUDWIG GANGLBAUER. Pp. 557, large 8vo. Vienna, 1892.

Vienna has for a long time past had the honour of supplying students of European *Coleoptera* with an acceptable work for determining their collections. Ludwig Redtenbacher's "Fauna Austriaca ; die Käfer" went through three editions, the last appearing in 1874 ; and since then the Bestimmungs-Tabelle of Herr Reitter, of Vienna, have been much in demand. Now Herr Ludwig Ganglbauer, the worthy successor of Redtenbacher in the Natural History Museum at Vienna, has had the courage to undertake the difficult task of furnishing a new work descriptive of all the *Coleoptera* found in Central Europe.

This first volume is devoted to the "Caraboidea." The work is expected to be completed in six volumes, and the second volume, devoted to "Staphylinoidea," is now in course of preparation.

The volume is a great advance on its predecessors in the same field, and will be found far more satisfactory to work with ; the great deficiencies of the previous Viennese works we have alluded to were that they were almost confined to complex tables, and gave little or no information as to variation and habitat. Herr Ganglbauer has availed himself of the assistance of well-prepared analytical tables, but has not trusted exclusively to them, each species being also described separately. Most of the important synonymy is given accompanied by references ; there is a fair amount of information as to varieties, but the indications as to habitat are perhaps rather too much generalized. Taken altogether there can be no doubt that this is the best systematic work that has yet been produced on the *Coleoptera* of a large division of the European fauna. Unfortunately it is not accompanied by plates, though there are a few woodcuts in the text. Herr Ganglbauer includes in his series *Caraboidea* not only the *Gyrinidæ*, but also the *Paussidæ* and *Rhysodidæ*, and in his definition of the series he assists himself by reference to the larvæ, and to the wing neuration. It is clear that as practical aids to the determination of *Coleoptera* these characters are of little value, while as scientific expositions they are open to the objection that they have been tested only in the case of a comparatively small number of the forms to which they are supposed to apply. We mention this merely because we do not wish that the hearty approbation we give to the book for its general execution shall be taken as expressive of approval of all its details.—D. SHARP.

THE BUTTERFLIES OF NORTH AMERICA : by W. H. EDWARDS. 3rd Series, Part xii. Boston and New York : Houghton, Mifflin, and Co. 1891.

This is an unusually interesting Part. It is occupied by *Papilio americanus*, Koll. ; *P. Zolicaon*, Bdv., transformations showing the great dimorphism of the

larva; *Chionobas Uhleri*, Reakirt, with nearly 40 figures on the plate; and *Ch. Varuna*, Edwards, a species found at a comparatively low elevation, and of great variability as to the spotting of the wings. Local, and all other information, is as detailed as usual.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *December 21st, 1891.*—Rev. C. F. THORNEWILL, Vice-President, in the Chair.

Mr. P. W. Abbott showed *Agrotis obelisca*, taken by Mr. A. J. Hodges in the Isle of Wight, also a specimen of *Noctua c-nigrum*, with which species Mr. Hodges says *obelisca* is often confounded on the sugar. Mr. R. C. Bradley showed *Pyrellia lasiophthalma* from Sutton. Mr. Abbott read a paper on "A holiday collecting in the Isle of Wight." He worked specially for *Agrotis lunigera*, with considerable success, but such was the danger of collecting on the cliffs where alone they are to be taken, that he advised others to leave it alone.

January 11th, 1892.—Mr. W. G. BLATCH, President, in the Chair.

Mr. R. C. Bradley showed some *Diptera* which had been shown at a former Meeting as *Pteropæcila lamed*, with the note that they had been confirmed as that species by Mr. Verrall. They had since, at his request, been again submitted to Mr. Verrall, and he names them as *Toxoneura muliebris*, and remarks that *P. lamed* is not yet recorded satisfactorily as British. A letter was read from Mr. C. J. Fryer recording *Stenamma Westwoodi* from Warwick. Mr. C. J. Wainwright read a paper on "A holiday spent in North Cornwall last year," in which he described the results of a fortnight's collecting on the North Coast, during which he took *Plusia orichalceæ*, and many good *Diptera*. The paper was illustrated by photographs and the collections made.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The Annual Meeting was held on Monday, January 11th, 1892, in the Class Room of the Free Public Library, William Brown Street. The President, Mr. S. J. CAPPER, F.L.S., F.E.S., occupied the Chair, and in the course of his Annual Address referred to the entomological records of the past year, and also gave a series of most interesting personal reminiscences of his experience as an entomologist for over fifty years. This began at an Epping School, where Henry Doubleday did so much work, and helped the schoolboys by naming and describing their captures. The President spoke of the science since his first acquaintance with it, and the improvements in the mode of capturing and preserving specimens. He referred also to the inauguration of the Lancashire and Cheshire Society, the first Meeting of which was held at his house at Huyton in March, 1877. The President further enumerated the principal achievements of the past session. In conclusion, he remarked that it was to the younger Members that they now looked for the success of the Society. Mr. Capper was re-elected President, and the Rev. H. H. Higgins, Vice-President; Mr. F. N. Pierce, Hon. Secretary, and Mr. C. H. Walker, Hon. Librarian, were re-elected; the New Members of the Committee being Mr. George Harker and Mr. C. E. Stott. During

the evening the following specimens were exhibited by the Members named :—the President, varieties of British *Lepidoptera* ; Mr. C. S. Gregson, varieties of *Eupithecia venosata* ; Mr. R. Newstead, life-history of the bot fly, *Gastrophilus equi* ; Mr. H. B. Jones, *Phycis splendidella*, captured at Wallasey, July, 1891 ; Dr. J. W. Ellis, a fine web formed by the larvæ of *Ephestia elutella* ; and Mr. C. E. Stott, Scotch *Dasydia obfuscaria*, *Noctua sobrina*, &c.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY : *January 14th*, 1892.—W. H. TUGWELL, Esq., President, in the Chair.

Mr. A. Harrison, F.C.A., F.R.M.S., was elected a Member.

Mr. R. Adkin exhibited *Sesia ichneumoniformis*, Fb. ; Mr. Tugwell remarked that the larvæ were supposed to feed on *Lotus corniculatus* ; Mr. Weir said it used to occur at Charlton, and he thought there was no *Lotus corniculatus* in this particular locality. Mr. Jager exhibited two varieties of *Vanessa Antiopa*, L., bred by Mr. Werner, of Biedenkoff, Germany. Mr. C. Fenn showed *Agrotis tritici*, L., grey and dark forms from Deal, and dark forms from the North of Scotland and Sligo. Mr. Tugwell again exhibited the black specimens of the *Eupithecia* from Paisley, with typical examples of *E. virgaureata*, Dbl., and *E. castigata*, Hb., and remarked that he was quite sure it was not a black form of *E. satyrata*, nor, as Mr. Tutt suggested, of *E. virgaureata*, but was undoubtedly referable to *E. castigata*. Mr. Tutt said he was still of opinion that the species was *virgaureata*, which he had on many occasions received from Paisley. Mr. C. G. Barrett said he was inclined to think Mr. Tugwell was right in referring the examples to *castigata* ; and added that at Cannock Chase he had taken dark specimens of *castigata* nearly as black. Mr. Tugwell said he thought Mr. Tutt's specimens were *castigata*, and not *virgaureata*, but Mr. Barrett said four of them were certainly the latter.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON : *January 27th*, 1892.—The 59th Annual Meeting, adjourned from the 20th inst. on account of the death of H.R.H. the Duke of Clarence.—FREDERICK DUCANE GODMAN, Esq., President, in the Chair.

An abstract of the Treasurer's accounts, showing a good balance in the Society's favour, having been read by one of the Auditors, Mr. H. Goss read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1892 :—President, Mr. Frederick DuCane Godman, F.R.S. ; Treasurer, Mr. Robert McLachlan, F.R.S. ; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S. ; Librarian, Mr. George C. Champion, F.Z.S. ; and as other Members of the Council, Mr. C. G. Barrett, Mr. Herbert Druce, F.L.S., Mr. Henry J. Elwes, F.L.S., Prof. Raphael Meldola, F.R.S., Mr. Edward B. Poulton, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. It was also announced that the President would appoint Mr. Elwes, Dr. Sharp, and Lord Walsingham, Vice-Presidents for the Session 1892—3. The President then delivered an Address.—H. Goss, *Hon Sec.*

ENTOMOLOGICAL NOTES FROM FREMANTLE, &c.

BY JAMES J. WALKER, R.N., F.L.S.

We are now about half-way to our resting place (Hobart), our progress having been much delayed by the difficulty of obtaining coal. This has detained us here ever since Nov. 22nd, not in the least to my regret, as, after the dreary north-west coast, this and the other localities we have visited on our way down are perfect entomological paradises! Indeed, I have rarely, if ever, had better or more interesting collecting than I have enjoyed during the past week. I consider that here I have seen Australia for the first time. It is, however, not a little difficult to get much time to oneself, as the people at this place are so kind and hospitable that one is fairly overwhelmed with invitations.

I now proceed to give a brief *resumé* of my doings since leaving Baudin Island on October 25th.

On the 27th we arrived at Roebuck Bay (where Dampier landed in 1688, or thereabouts), and remained in this spacious but exposed anchorage until November 1st. During this time I had several opportunities for landing, and found quite a nice little lot of things, the only drawbacks to enjoyable collecting were the heat, which is very great, and the simply appalling number of flies, which seem to be worse, if anything, than when this plague (for it is a real plague) was so graphically described by Dampier: from earliest dawn until long after sunset they swarm around you, especially affecting the corners of your eyes, but fortunately they do not bite, they only tickle like the common house-fly, which they much resemble, except that they are smaller and greyer. The country is somewhat like that around Port Darwin, dry and sandy, and for the most part covered with an open *Eucalyptus*-scrub, and plenty of mangroves near the salt water. There is a small settlement (Broome), the head-quarters of a considerable pearl-shelling industry on this coast, and also the terminus of a submarine telegraph cable to Banjoewangie (Java), but not above 100 white people, if as many; plenty of "niggers," but all quiet and harmless fellows. In my several excursions on shore I got perhaps 100 species of insects, of which about 70 were *Coleoptera*. *Lepidoptera* were very scarce, the only one at all plentiful being the common *Pieris teutonia*, though I saw a fine blue *Amblypodia*, apparently different from the Port Darwin one, which I failed to catch. I obtained also a few pupæ of a very beautiful little *Chærocampa*, which I have since reared. Nearly all my best captures of *Coleoptera* were made in a small clearing near the telegraph quarters, where there

were plenty of stumps and logs in various stages of decay, though unfortunately all very dry ; but under the loose bark I obtained one or two fine *Elaters* of large size, a fine black, punctured *Heteromeron* an inch or more long, like a common Port Darwin insect, only quite twice the size, *Apate* sp. (very fine), several *Cucujidæ* (including a handsome parallel black insect, which I think is a *Passandra*), *Cleridæ*, *Cossonidæ*, &c.—all different from any which I had previously met with, and very interesting. I also made a good haul under loose flakes of bark of white gum (*Eucalyptus* sp.), including several of a beautiful Longicorn (? *Phoracantha*), with small spinous processes on each joint of the antennæ, in build somewhat like a large *Hylotrupes*, but punctured all over, and beautifully mottled with shades of light and dark brown ; also some weevils allied to *Acalles*, a species somewhat like *Thymalus* in aspect (of which I have found many species southwards, it is apparently a large Australian genus), various *Carabidæ* allied to *Dromius*, &c., &c. Not much by sweeping, beyond a very nice *Pelecotomoides*, with splendid antennæ in ♂ ; a very British-looking *Aphodius* in cow-dung, and a few small species allied to *Opatrum* under stones, with, of course, *Corynetes violaceus* under bones, &c. ; some nice little *Lamellicorns*, *Brenthidæ*, weevils, &c., were also taken at light in the telegraph quarters, where the officials kindly kept for me whatever flew in of an evening.

Roebuck Bay is not by any means a pleasant place to land at, except at the very top of high water, as the tide rises and falls quite 30 feet, and at low tide you have to plod as best you can over a mile and a half of sandy mud. But altogether I enjoyed my stay there very much, after our long exile on the "Holothuria Banks."

Our next port of call was Port Walcott, or Cossack (about 10 miles from Roeburne, which place I was unfortunately unable to visit), still I had a good day at Cossack, where the soil is sandy and treeless, in fact, not very unlike many places on our own coast. The heat was so intense in the middle of the day (107° at 2 p.m. in the shade), that I did little or no work after 11 a.m., taking it easy in the hotel at Cossack. I managed to get 21 or 22 species of *Coleoptera*, including a large number of a beautiful blue *Heteromeron* ; the latter occurred at the roots of the bent-grass. A pair of a very fine *Buprestid* (*Stigmodera* sp.), an inch and a quarter long, brilliantly marked with dark blue on a bright yellow ground (the finest beetle yet obtained by me in Australia), was given to me by a resident at Cossack. *Pieris teutonia* was abundant and very fine, and numbers of the larvæ were collected from the *Capparis* bushes, from which I bred a very nice series.

We left on November 5th, and after rounding the N.W. Cape of Australia on the 9th, encountered the usual strong south wind which prevails on this coast at the present time, and we did not arrive at our next port, Gascoyne, at the entrance of Shark's Bay, until the evening of the 18th. This part of the Australian coast is one of the most dreary and barren-looking in the world, and Gascoyne is no exception, little or no verdure visible except a few mangroves. I am told, though, that the country in the interior is much finer. Being busily occupied with coaling ship on the 11th, I was unable to land at Gascoyne. We started next day on our voyage to Geraldton (Champion Bay), intending to go out into the ocean by the Naturaliste Channel, but in crossing Shark's Bay we encountered so strong a head wind, that it was decided, at 4.30 p.m., to anchor under the north end of Dirk Hartog Island. The following morning (13th) it still blew rather hard, but not so much as to prevent me landing for two or three hours on Dirk Hartog Island, and having a very enjoyable ramble. I found I had got into quite a new style of country, cliffs about 150 feet high bounding an undulating plain, covered with a vegetation which reminded me somewhat of an English heath, or still more like that of some of the open plains near the Cork Woods of Southern Spain, mostly low, hard, wiry shrubs, but bearing very pretty flowers, and in very great variety. I should say that even here in this barren island there were more species of plants to the acre than to the square mile in the country round Port Darwin. Insects were generally rather scarce, and consisted chiefly of small Sitoniform weevils, "chafers," a species like a large reddish *Meligethes*, and two small *Buprestidæ* (rare), perhaps 20 species in all. Butterflies were represented by two or three species of *Lycænidæ*, slightly modified forms of familiar North Australian insects, as far so I can make out.

The wind moderating at noon, I was recalled by signal from the island, and we left for Geraldton at 1.30 p.m.; but we were fated not to get there, as the head wind increased to the force of a gale, with a very heavy sea dead in our teeth, the consequence being that with all the power we could get out of our engines with the vile Australian coal we had on board, we could not make more than three miles an hour. It was therefore decided to give up Geraldton, and to make for the "Houtman's Abrolhos" Islands; accordingly, on the afternoon of the 16th we came to anchor, in smooth water, under the lee of East Wallaby Island, at the north-eastern extremity of this little archipelago of coral reefs and islets. We were detained here by the wind (although

otherwise the weather was beautifully fine) until the morning of the 20th, and during this time I made the most of my opportunities of working on this remote little island, with, I think, pretty fair success. Although the Houtman's Islands are all of very small size (East Wallaby, one of the largest, is triangular in shape, and each side little more than a mile in length), they are covered with a dense and varied shrubby vegetation, and contain some peculiar forms of animal life. Insects were tolerably plentiful, but nearly all of small size, probably 50 species of *Coleoptera* in all, the largest being a nice flat brown Heteromeron, of the genus *Helæus* (I think I have found the same, or something very like it, at Fremantle): a fine little Cossonid (?) weevil, very abundant under washed-up seaweed on the beach, and varying from very pale testaceous to pitch-black, every intermediate shade being found: *Tetragonoderus* sp., a lovely scarlet and black *Malachid*, *Anthici*, many small weevils, &c., obtained by grubbing at the roots of bent-grass and herbage. I saw only two species of butterflies, a common *Lycæna*, and a very pretty little skipper, allied, I think, to *Cyclopides*, this last was fairly common, and I set out a good series; I have seen nothing like it at Fremantle, so I hope that it will turn out good. The Wallaby Islands are not inhabited, though there are extensive guano workings on some of the southern islands of the Houtman's group.

Leaving our anchorage at 5 a.m. on the 20th, we had a tolerably smooth passage to Fremantle, where we anchored early on the morning of the 22nd. From the sea, although somewhat low and sandy, the country round about presents a much more pleasing aspect than further to the north, as there is a very great deal of fine timber left, some of the trees, especially the one which yields the famous "Jarrah" wood, or Australian mahogany (*Eucalyptus marginatus*), being of large dimensions. From Fremantle to Perth, the capital of Western Australia, is about 12 miles by rail, and the intervening country being except on the banks of the Swan River, but little cleared or cultivated, one can easily get into first-rate collecting ground in a few minutes; and as the railway authorities kindly gave us free passes during the whole of our stay, you may be sure that I frequently availed myself of the opportunity. Both Fremantle and Perth are very pretty little towns, especially the latter, which is situated on a fine reach of the Swan River; they are of about 5000 inhabitants each. About 9 miles beyond Perth is a village called Guildford, very prettily situated on the Swan, in the middle of a fine agricultural and pastoral district; this place I visited on the 26th with good results. On the 30th I

went to a station about 15 miles beyond Guildford, called Darlington, but as I went with a large party I could not get much collecting, though I did manage to scramble up a few things. The "scrub" between Fremantle and Perth is very interesting—a fine open growth of large *Eucalyptus* trees, beneath which is a wilderness of beautiful flowering shrubs, all strange to me, *Leguminosæ*, *Banksias*, and *Compositæ*, perhaps predominating; the soil is everywhere clean, dry, and sandy, with limestone cropping out in places. During our stay at Fremantle I have collected at least 200 species of *Coleoptera*, though I have missed most of the nice *Buprestidæ*, &c., which appear to be so common here as to have local names, such as "anchor beetle," &c.; of these, however, I have received some specimens from residents who have kept them as curios. Among them I have several of a grand ochreous-brown *Stigmodera*, nearly $2\frac{1}{2}$ inches long, but this last comes from Geraldton, further up the coast. Weevils appear to predominate, there being several most curious knobbed and warted terrestrial kinds, having the habits of *Brachycerus*, though not related to that genus I think; two or three of these bear a most curious resemblance to species of *Sepidium*; many others of singular form and pretty colours are got by brushing the bushes, with small *Buprestidæ*, *Cryptocephali*, &c. *Heteromera*—some nice forms, mostly of no great size, but including three species of *Helæus*, one of which is a grand fellow, with long hairs on the disc of the elytra; this last appears rare. *Carabidæ* are pretty numerous, but for the most part rather obscure looking, though there is a fine black *Scaritid* found rarely under logs; a few nice *Longicorns*, *Chrysomelidæ*, chafers, &c. I found only one ant's nest beetle, a small species of the remarkable genus *Articerus*. Plenty of nice looking *Hemiptera*, *Hy-menoptera*, *Diptera*, &c., but apparently not many butterflies. The commonest is a *Heteronympha* (*Philerope* ?), which looks exactly like our *Pararge Megæra* on the wing; the larger *H. Merope* is not common, but *Pyrameis cardui* is plentiful, and I have also taken *P. Itæ*; several very pretty little blues, and one very large and fine species of the curious Australian genus *Ogyris* in plenty, but rather worn. I have also taken a nice series of an anomalous "skipper," *Synemon* sp. Our British *Heliothis armiger* is not rare here.

We leave on the 3rd for Hobart direct, but will hardly, I think, get there before Christmas.

Fremantle, Western Australia:

December 1st, 1890.

ON THE ORIGIN OF ANTS' NESTS.

BY W. W. SMITH.

Before 1881, the year in which Sir John Lubbock published his volume on "Ants, Bees, and Wasps," nothing absolutely was known of the mode, or means of origin of ants' nests. Various theories had been suggested and others put forward to explain the origin of young communities. But the experiments conducted to discover their origin before Lubbock's time were inconclusive; thus the interesting fact was left to be discovered by that patient and accurate experimenter and observer of the habits of the social *Hymenoptera*. To every student of any group of insects there are generally some special characteristics in their history which he seeks to discover, and certainly the habits of ants offers an almost inexhaustible field for this purpose. Three principal modes of origin of ants' nests had been suggested before the problem was solved by Lubbock. In the words of the latter they are as follows:—"After the morning's flight the young queen may either

- (1) Join her own or some other old nest;
- (2) Associate herself with a certain number of workers, and with their assistance commence a new nest; or
- (3) Found a new nest by herself."

In the case of *Myrmica ruginodis*, Lubbock showed conclusively that under certain conditions the queens of the species are endowed with the power to found communities, as by isolating two pairs in the autumn they succeeded in establishing a small nest in the following summer (Ants, Bees, and Wasps, pp. 32, 33). The patient care bestowed on them, and the very favourable conditions surrounding their isolation, viz., "damp earth, food, and water," were doubtless all that was necessary to enable them to found a nest.

Having devoted much time for many years to observing the habits of several species of New Zealand ants in their natural state, I am convinced that none of the three modes suggested would explain the origin of the nests of any indigenous species I have observed. My observations have been made chiefly on two species of *Tetramorium* (*T. nitidum*, *T. striatum*, Smith), both being common on the banks and old beds of the Ashburton river, and within a few minutes walk from home. The nests occur under various sized stones lying partly buried in the sandy soil; they also occur on the terraces of the river, and on the open plains, but more so on the stony parts. The roots of the low-growing stunted vegetation form a fine network beneath the

stones, and on these subsist several species of root-feeding Aphides and Coccids. Two species of the former, a white and a scarlet, and two of the latter (*Dactylopius poæ*, Maskell), and a new species of *Ripersia*, occur in the nests of the *Tetramoria*. There are also numbers of slate-coloured mites, and a minute white form of *Platyarthrus* inhabiting their nests; along with these I have discovered a new genus of formicarious beetles (*Diarthrocera formicæphila*, Broun), lately examined and named for me by Capt. Broun. The habits and economy of these "hosts" and parasites do not differ materially from other allied species recorded by Lubbock and others as inhabiting the nests of British ants. Their occurrence, however, illustrates the general rule that parasites and serviceable species are more or less present in all ants' nests in all parts of the world, at least, so far as their economy has been investigated. I am not aware that the occurrence in certain localities of several species of root-feeding Aphides and Coccids has been observed by entomologists as forming the basis of ants' nests, yet, according to my researches, such is the case with our *Tetramoria*. After the annual flight, which generally occurs in February and March, according to the conditions of the atmosphere, I have frequently observed isolated individuals of both sexes and both species roaming about among the boulders lying among the stunted and mixed vegetation. By the middle of May, when the colder weather sets in for the winter, or rainy season, they disappear, and are very rarely seen above ground; while endeavouring to ascertain what became of the ants when they disappeared, we discovered a clue to the origin of their nests. In order to test and settle the question perfectly, we have been in the habit of turning over hundreds of boulders annually, and carefully noting the origin and development of their nests. From the middle of April and onwards through the winter we have observed many instances of only a few ants of both sexes being associated together: in numbers we have noted from two up to eight and ten together, and from these we have watched their increase and development into various and good-sized communities in a single season; searching for these founders of new nests requires to be done with great care, as very little causes their occupants to desert the site, which is disappointing. But this is due chiefly to the Aphides and Coccids feeding on the roots beneath changing quarters, caused by the admission of air and light while turning over the boulders.

I have mentioned the presence of Aphides and Coccids feeding on the roots beneath the boulders, as forming an economic basis for

the origin of the ants' nests. The cool, damp under-sides of the boulders naturally draw the roots of plants and attract their parasites to them, while at the same time they afford the requisite conditions for establishing young communities of the ants. The latter instinctively search for these sites, and while thus engaged several of the sexes meet and associate together to form new nests. Beneath some of the stones we have often observed where they had only commenced to excavate their galleries, and we have seen others in course of progress—from the most rudimentary to the highly finished and numerous galleries in the nests of old and flourishing communities. In studying their habits we invariably use a large strong lens, which enables us to note their treatment of the minute Coccids associating with them; where a few ants are establishing themselves, and the stone be turned over, they will generally remain motionless for a few seconds, as if bewildered, then moving slowly right and left, they begin to move rapidly about the new site, judging from some of their motions they appear to me under these circumstances scarcely to know their whereabouts. Their actions are, however, different in the more advanced stages of the nests, as they exhibit a clearer perception, and move with more deliberation. In old established communities, they possess a perfect knowledge of their surroundings. In selecting sites for new nests, the ants appear invariably to select such where the roots are already occupied by Aphides and Coccids, and soon the ants begin to act as their guardians. If a newly selected site be disturbed by turning over the stone, the Aphides and Coccids will occasionally leave it, and the ants will disappear with them. Whilst examining many of the new sites, we have frequently observed the heads of several of the ants to be covered with the white cottony secretion of the Aphides and Coccids, as if they had been removing them, or obtaining food from the secretion; this we noted on first turning over the stone. When the work of excavating the galleries has commenced, the ants do not readily desert the site, and they bestow great care on the domestic, or economic, inhabitants of their nests. In a short time after the selection of a site, the ants, especially the males, will seize a Coccid and carry it about the nest, apparently merely to protect it; I have frequently tried with a long fine pin to induce an ant to relax its hold of the Coccid, but without success, the experiment invariably excited the ant, and caused it to quicken its pace. When a portion of a gallery is formed, or any interstices occur among the small stones in the site, the ants carry and deposit the Coccids in such places of safety: in old communities they are borne into the

inner galleries to be carried out to the courts of the nests when all danger is passed. We have reluctantly sacrificed the galleries of several nests to enable us to study their habits or modes of dealing with their economic inhabitants, and on several occasions in older nests we have seen some of the smaller forms of workers ineffectually struggling with a large Coccid, endeavouring to remove it to a place of safety; while many other ants in hurrying past would stroke the Coccid with their antennæ, but make no effort to remove it. The latter are always conspicuous objects in the nests, and if not seized and carried off by the ants generally endeavour to conceal themselves by moving slowly away; I have often watched them disappear unaided into the galleries. Many of the stones we turn over have numbers of ants and Coccids adhering to their under-surface, on such occasions the ants will generally, but not always, crowd around the latter and remain in motionless groups until the stone is again placed over the nest.

But the subject of my remarks is the origin of their nests in their natural state, and in dealing with it, it cannot be doubted that the study of ants in a state of nature is more difficult than in conveniently constructed artificial nests. In giving a brief summary of the general economy and habits of the *Tetramoria*, as I have observed them here, it will appear clear to students of the group that they differ considerably from other species observed and recorded by Hymenopterists in other parts of the world, I have, likewise, made it sufficiently clear that these nests originate by the union of several individuals of both sexes on sites already instinctively selected and inhabited by Aphides and Coccids, which serve as an economic basis while founding their nests. As the colonies increase along with the warmer weather, and the increasing supply of other food, the ants bestow less care on them than during the founding and earlier stages of the nest. The sites of the nests are well adapted to the habits of ants in all weathers: in winter the heavy rains percolate freely through the loose sand and fine shingle, while in summer they are cool and damp, and afford perfect conditions for hatching their eggs and rearing their larvæ. The nests being placed under stones are free from the attacks of birds and other enemies which attack the mound-making and other species.

In dealing with the economic and parasitic groups of insects inhabiting ants' nests, the habits of the former have received the most attention from entomologists. In studying the literature of the subject, especially such dealing with parasites, I have been much interested

in a paper "On the capture of Formicarious Histeridæ:" by G. Lewis, F.L.S. (Entomologist, xxi, 289). Referring to the habits of the beetles observed in ants' nests, Mr. Lewis writes: "The ant here which attracts the beetles is an *Aphænogaster*, * * * and makes a nest under stones which are half embedded in the clay." Again: "The *Histeridæ* are generally found feeding on the larvæ, attaching themselves to them by their mandibles and legs." And, further: "By the middle of May the sun heats the stones, the soil becomes parched, and the *Aphænogaster* either becomes solitary, or the colonies retire to cooler places. Information on this matter is of much interest to me, as I have been unable to learn what becomes of the *Histeridæ* (if in the imago) in the hot months of summer and autumn." These observations on ants' nests and their parasites were made by Mr. Lewis on the southern border of the Mediterranean. The sites of the nests of *Aphænogaster*, as described, afford a striking contrast to sites inhabited by the *Tetramoria*, at least in the nature of the material underlying the stones. Throughout the dry heat of several summers we have observed the ants gradually descend deeper into the cool shingle, but in no case to become solitary. The beetles (*Diarthroceræ formicæphila*, MS. name) occur in the nests through the summer, but I have not so far detected them attacking the eggs or larvæ of the ants; I have, however, seen them feeding on the transparent gelatinous substance sometimes left on small stones in the nests, after the ants have removed their eggs and larvæ into the inner galleries. Like the *Eretmotus*, observed by Mr. Lewis away from ants' nests, I have also found *Diarthroceræ* under stones where there were no ants; and am, therefore, of the same opinion as that gentleman regarding *Eretmotus*, that *Diarthroceræ* passes its larval and pupal stages apart from the ants, and only enters their nests in the imago state. The new *Ripersia* mentioned will shortly be described and figured by Mr. Maskell, the able authority on New Zealand *Coccidæ*.

In order to ascertain if the *Tetramoria* form granaries, or otherwise store food in summer and autumn for winter use, we have carefully examined many old nests in the months of April and May. But in no instance did we discover any food stored; we, however, have invariably noticed a greater number of Aphides and Coccids in their nests during winter than in summer or autumn, and I think it probable that they are brought into the nests by the ants before the winter from beneath the adjacent stones. But on this question and others in their economy, I have not satisfied myself; there are communities of a larger and a smaller species or varieties of *Tetramorium*

occurring in this district, and in the nests of the former I find the large white *Aphis* only. On the main question, the origin of their nests, I am convinced that they originate by the mode I have described. How it applies to other genera in New Zealand I cannot at present determine, or how it applies to the origin of the nests of other species in other parts of the world I must leave resident Hymenopterists to determine; doubtless many originate on some economic basis.

Ashburton, N. Z.:

October 3rd, 1891.

NOTES ON THE SYNONYMY OF SEVERAL WEST AFRICAN *LYCÆNIDÆ*.

BY HAMILTON H. DRUCE, F.E.S.

Several instances have lately come under my notice in which the same species has been described under different names, and to prevent further difficulties and errors, I have determined to note them without further delay.

Teriomima dispar, Kirby (Annals and Mag. Nat. Hist., Ser. 5, vol. xix, p. 367 [1887], and Rhop. Exot. Afr. Lyc., iv, ff. 9—12 [1888]), and *Liptena Mnestra*, Möschler, doubtless represent the same species. Mr. Kirby's description was published in May, and Herr Möschler's (Beiträge Schmett. Goldk., p. 63) is dated April of the same year, and consequently must take precedence. Mr. Kirby's figure represents an insect with dark purple discs to both wings, although the description states it is "dark brown, fringes grey." *Teriomima Melissa*, mihi (Ent. Mo. Mag., vol. xxv, p. 109, 1888), is closely allied, but in some lights the whole of the upper surface is dark rich purple.

Pseuderesia Zoraida, H. G. Smith and Kirby (Rhop. Exot. Afr. Lyc., ix, ff. 9—12 [1890]), is a synonym of *Liptena rubrica*, mihi (Ent. Mo. Mag., vol. xxv, p. 108, 1888). Some time ago we lent the type specimen to Mr. H. G. Smith, with some others, to figure, but it was returned, as he considered it the same as *L. libentina*, Hew. Very shortly afterwards he describes and figures an exactly similar specimen as *P. Zoraida*. I still think the species is better placed in *Liptena*.

Pseudaletis tricolor, Staud. (Iris, iv, p. 143, pl. 1, f. 5, 1891), is the ♂ of *P. Agrippina*, mihi (Ent. Mo. Mag., vol. xxiv, p. 259, 1888), from which it differs in the somewhat smaller size, smaller white spots, and the distinct dentate markings on the costa. The Rev. W. J. Holland has described another species (*P. zebra*) of this genus in "Psyche" (p. 50, March, 1891) from the river Ogové, which is apparently very close to, if not the same as, my *P. Clymenus*.

Deudorix obscurata, Trimen (P. Z. S., 1891, p. 84, pl. ix, f. 13), is identical with *D. cærulea*, mihi (Annals and Mag. Nat. Hist., Ser. 6, vol. iii, p. 28, January, 1890). True *Deudorix* not occurring in Africa, and *Virachola* not being considered to have characters for distinction, this species will, together with nearly all the forms inhabiting that continent, find their place under *Rapala*.

In April, 1891, I published a short paper in the *Annals and Magazine of Natural History*, containing descriptions of two species from Sierra Leone, *Kopelates virgata* and *Pilodeudorix barbatus*. Both these, I regret to say, were soon afterwards (July, 1891) described as new by Dr. Staudinger (*Iris*, iv), and well figured, so I have no hesitation in saying his *H. gracilis*, p. 152, pl. 1, f. 9, = my *K. virgata*, and his *H. nobilis* = my *P. barbatus*.

Miss E. M. Sharpe described a species of *Spalgis* (*latimarginata*) in the *Annals and Magazine of Natural History* for October, 1890, which is the insect I referred to on p. 26 in the previous January part of the same Magazine as *S. lemolea*. I do not know whether the rules of nomenclature will allow the lady's name to take precedence, but shall be pleased to hear that they will.

The Rev. W. J. Holland has also described this species (under the name *Spalgis s-signata*) in *Psyche*, vol. v, p. 426, November, 1891, and has published a figure of it, together with its interesting chrysalis, in *Psyche*, vol. vi, pl. iv, 1892.

In reference to the two species of *Iolaus* described in vol. iv, part 1, of the *Iris* by Dr. Staudinger, I shall reserve my notes for another occasion.

The Beeches, Circus Road, N.W. :

January 11th, 1892.

ANOTHER ADDITION TO THE BRITISH FLEAS.

BY EDWARD SAUNDERS, F.L.S.

TYPHLOPSYLLA PENTACTENUS, Kol.

Of this very distinct species Dr. Sharp was fortunate enough to meet with several specimens of both sexes at Cambridge during last month on the Noctule Bat, *Vesperugo noctula*, Gmel., some of which he has kindly presented to me. It may be known by its five dorsal combs or rows of black spines: the first is on the posterior margin of the pronotum, and is composed of about thirty fine, long, sharp spines; the second on the posterior margin of the metanotum, of about eighteen (Taschenberg says fourteen) short blunt spines; the third and fourth on the first and second abdominal segments, composed each of about twenty-four spines, longer than those on the mesonotum, but shorter than those in the pronotal row; the fifth series is on the seventh segment, and is composed of about twenty spines, which are short, sharp, and rather recurved at the apex; the tarsal joints are differently proportioned to those of other bat fleas: in the front tarsi the first joint is short, not much longer than the second, the third and fourth are subequal; in the second pair the first joint is not so long as the second and third together, the fourth is very short, and the fifth about equal in length to the second; in the third pair the first joint is as long as the second, third, and fourth together, the second as long as the third

and fourth, the fourth being about two-thirds as long as the third, the fifth about two-thirds as long as the second.

Length, $1\frac{3}{4}$ — $2\frac{3}{4}$ mm.

While on the subject of fleas, I may mention that since writing the short note in the last volume of our Magazine (xxvii, p. 170), on *Typhlopsylla assimilis*, I have received, through the kindness of Messrs. Bignell and Piffard, numerous examples of *T. musculi*, which may be known at once from *assimilis* by the fringe of black bristly hairs along the upper edge of the tibiæ, as well as by the four genal spines, and the black scattered hairs of the upper surface.

St. Ann's, Woking :

February 15th, 1892.

SYNONYMICAL NOTES ON CYNIPIDÆ AND FORMICIDÆ.

BY PETER CAMERON, F.E.S.

Andricus Hartigii, Foerster.—In the Wiener Ent. Zeit., ix, p. 97, Von Dalla Torre changes this specific name to *Foersteri*, on the ground of there being an earlier *Andricus Hartigii*, Marshall. This re-naming is, however, quite unnecessary, inasmuch as Mr. Marshall has himself pointed out in the same volume (Ent. Mo. Mag., iv, 224), wherein he described *Andricus Hartigii*, that it was founded on *Diastrophus rubi*.

Pediaspis sorbi, Tischbein.—I am of opinion that with the dimorphic *Cynipidæ* the only satisfactory way of nomenclature is to use the earliest name under which either the agamic or bisexual form was described. Under this rule, *sorbi*, Tisch. (1852), must take precedence over *aceris*, Foer. (1869), notwithstanding that it is now known that both forms are found on *Acer*. But there is an earlier name than either, namely, *acerinæ*, Bremi (1847). It is true that Bremi (Beitr. z. e. Mon. d. Gallmücken, p. 64) only describes the gall, but his description leaves no doubt as to which species he meant: "*Cynips acerinæ*, lebt in erbsen-grossen, kugelrunden Gallen, die zahlreich an der unter Blattfläche sitzen."

About eight years ago, when I was working at ants, I wrote a short paper on a small collection of ants, brought by Mr. Edward Whymper from the Andes. The existence of this paper had completely escaped my memory until its publication recently in Mr. Whymper's travels in the Andes. The following species requires to be re-named: *Camponotus Mayri*, Cam.; the genus *Holcaponera* also requires a fresh name, as the name has been used (1887) by Mayr for a different species; and *Pheidole monticola* = *P. Cameroni*, Mayr. Not having been paying any attention to ants within recent years I do not know if the two first mentioned species have been described elsewhere; and merely publish this note to explain how the names described subsequent to the writing of the paper have been used.

Sale, Cheshire :

January 8th, 1892.

XYLOPHILUS BREVICORNIS, PERRIS, A BRITISH INSECT.

BY G. C. CHAMPION, F.Z.S.

The *Xylophilus* from the New Forest doing duty for *X. neglectus*, Duval (*nigripennis*, Villa), in my British Collection has nothing whatever to do with that insect. It agrees well with the description of *X. brevicornis*,* Perris (L'Abeille, vii, p. 20 [1869]), from Sos, Lot et Garonne, and I refer it to that species without hesitation. This so-called *X. neglectus* I obtained many years ago from Mr. Janson. The true *X. neglectus*, Duval, of which an excellent figure is given by the author in his "Genera," iii, t. 85, fig. 421, differs totally from the New Forest insect in the form of the antennæ, sculpture, pubescence, &c., and though it belongs to the same section of the genus (*Olotelus*, Muls.), it is not at all closely allied to *X. brevicornis*. *X. neglectus* is fully described by Aubé in Grenier's Cat. Col. de France, p. 91, and also by Mulsant, Colligères, p. 28. Crotch, Trans. Ent. Soc. Lond. (3), v, p. 449, originally introduced it in our list upon two specimens from the New Forest, which he says agree tolerably well with Aubé's description; the species, however, must be erased from our list. Rye, Ent. Ann., 1867, p. 84, mentions a specimen in the late Mr. G. R. Waterhouse's collection as probably belonging to *X. neglectus*; I have examined this insect, and it agrees perfectly well with my own. The Rev. Canon Fowler, in his "British Coleoptera," v, p. 91, correctly describes *X. neglectus*, but his description cannot have been taken from British specimens. He gives as localities "New Forest (Crotch, Power, Janson)," and "Wandsworth (Waterhouse)." The last mentioned locality, however, is incorrect, and refers to *X. populneus*. Dr. Sharp informs me that there is no representative of the New Forest insect in Mr. Crotch's collection at Cambridge; but I believe there are examples of it in the collection of the late Dr. Power, and also in that of Mr. Janson. I obtained specimens of both sexes of the true *X. neglectus*, Duval, in June last, on the mountain slopes below Vernet-les-Bains, Pyrénées-orientales, by beating evergreen oaks, *Scraptia dubia*, Oliv. (*fusca*, Latr.), occurring in abundance with it.

The following is a description of the New Forest example in my collection. Perris does not mention the sex of the specimen described by him. The species may be easily distinguished from all others of the section *Olotelus* by the remarkably short antennæ in the male sex, joints 4—10 being strongly transverse.

* Misprinted *brevicollis* in the Munich Catalogue.

XYLOPHILUS BREVICORNIS, Perris.

♂. Moderately elongate, narrow, parallel; pitchy-brown, the head black, the antennæ fusco-testaceous, with the three basal joints and the apical one paler, the legs entirely testaceous; the upper surface clothed with fine greyish pubescence, the elytra moderately shining, the head and prothorax dull. Head very finely, rather sparsely punctured; the eyes unemarginate, separated by a space about equal to three-fifths of the breadth of the head; antennæ thickening outwardly, stout, short, extending very little beyond the base of the prothorax, joint 1 incrassate, conical, 2 rather narrower, submoniliform, 3 slightly longer than 2, 4—10 strongly transverse, 7—10 wider than 6, 11 nearly twice as long as 10, ovate; prothorax moderately convex, about as long as broad, parallel at the sides behind, densely and rugulose punctured, and with a deep transverse basal groove, which is interrupted in the middle by a distinct dorsal carina; elytra elongate, parallel, each with a deep oblique depression below the base, densely and rather coarsely punctured, the punctuation becoming still coarser towards the base and finer towards the apex; the posterior femora angularly dilated on the lower side beyond the middle.

11, Caldervale Road, Clapham, S.W.:

February 8th, 1892.

MIGRATIONS AND NEW LOCALITIES OF SOME COCCIDS.

BY W. M. MASKELL, F.R.M.S.

It may, perhaps, be not without interest and value to record now the occurrence of some scale-insects in countries different from those in which they were at first reported. Some day European entomologists will begin to think seriously of giving attention to these insects, and every note regarding them will then be useful. In these days of steam and rapid transit all sorts of insects are being carried about from country to country much more extensively than at any previous period: some travel in the straw and litter of packing cases, some in the luggage or clothes of passengers, some (very often) in the bunches of flowers and specimens of plants taken on board ship by tourists; and they have not time to die before they are landed in a new country and set free. The list which I now give will be, of course, incomplete in a short time, as new arrivals appear so frequently. It contains, however, some of the most troublesome pests with which cultivators have to deal; and it shows how these have already travelled far and wide. I give here *only* such insects as have come under my own personal observation; I think it might be useful if from time to time similar comprehensive lists were compiled by entomologists in different countries.

It must not be supposed that in all the cases herein given the insects have *certainly* travelled within the last few years. For example, I incline to the belief that *Aspidiotus nerii*, or *Dactylopius cocotis*, amongst others, range naturally over a wide extent of the globe; the occurrence again of such a species as *Diaspis pinnulifera* in two countries such as Fiji and Demerara, which have scarcely any direct communication, points to its being a native of both. But a good many of the others have undoubtedly travelled in the wake of civilization.

Aspidiotus aurantii, Maskell, first reported New Zealand, 1878. Occurs in N. America (Comstock, 1880), Australia, Syria (Riley, Insect Life, June, 1891), Cyprus (Kew Bulletin, September, 1891), and probably most countries where oranges are grown. The original habitat may be the shores of the Mediterranean. Very injurious. *A. budlæia*, Signoret, Europe, 1868. Occurs in New Zealand (Maskell, 1878). A greenhouse species, very closely allied to *A. nerii*. *A. camellia*, Boisduval, Europe, 1867. Occurs in N. America (= *A. rapax*, Comstock, 1880) and New Zealand (Maskell, 1878). Common and very injurious, chiefly on *Euonymus*. *A. cydonia*, Comstock, N. America, 1880, on quince. Occurs in Samoa, South Pacific, on oranges; specimens received lately by me. *A. destructor*, Signoret, Mauritius, 1869. Occurs in the Laccadive Islands (Maskell, 1891) and probably elsewhere. Very destructive to cocoa-nuts. *A. epidendri*, Bouché, Europe, 1844. Occurs in New Zealand (Maskell, 1878). A hothouse species. *A. nerii*, Bouché, Europe, 1833. Occurs in N. America (Comstock, 1880), Australia, New Zealand, South Sea Islands, and probably in many other countries. Very common on many plants, with several varieties.

Diaspis Boisduvalii, Signoret, Europe, 1868. Occurs in New Zealand (Maskell, 1878) and N. America (Comstock, 1883). A greenhouse species. *D. pinnulifera*, Maskell, Fiji, 1890. Occurs in Demerara, on *Croton*; specimens lately received by me. *D. rosæ*, Sandberg, Europe, 1784. Occurs in N. America (Comstock, 1880), Demerara (Morgan, Ent. Mo. Mag., February, 1890), New Zealand (Maskell, 1878), Australia, Fiji, 1891, on roses. Common and injurious.

Mytilaspis citricola, Packard, N. America, 1870. Occurs in Fiji (Maskell, 1890), on oranges. *M. Gloverii*, Packard, N. America, 1869. Occurs in Australia (Maskell, 1890), on oranges. Probably only a variety of the last species. *M. pinnaeformis*, Bouché, Europe, 1851. Occurs in Demerara, on *Croton*; specimens lately received by me. Mr. Morgan (Ent. Mo. Mag., September, 1890) considers this species as probably identical with *M. citricola*. *M. pomorum*, Bouché, Europe, 1851 (= *Cherm. conchiformis*, Gmelin, 1788). Occurs in N. America (Comstock, 1880), New Zealand (Maskell, 1878), Australia (French, 1891), and probably many other countries. Very common and injurious on apples, with varieties on several other trees.

Chionaspis citri, Comstock, N. America, 1883. Occurs in New Zealand, rarely, on oranges (Maskell, 1884); Australia (Maskell, 1891), on palms. *C. aspidistræ*, Signoret, Europe, 1868. Occurs in India (Maskell, 1891), on *Areca catechu*.

Parlatoria Proteus, Curtis, Europe, 1843. Occurs in N. America (*Comstock*, 1883) and Demerara (?), on *Croton*; from specimens lately received by me.

Fiorinia camelliæ, Comstock, N. America, 1883. Occurs in Australia (*Maskell*, 1891).

Lecanium coffeæ, Walker, Ceylon, 1852. Occurs in Fiji. Very injurious to coffee plants. *L. depressum*, Targioni, Europe, 1867. Occurs in New Zealand (*Maskell*, 1878). *L. hemisphæricum*, Targioni, Europe, 1867. Occurs in New Zealand (*Maskell*, 1884). *L. hesperidum*, Linné, Europe, 1735. Occurs in N. America (*Comstock*, 1880), New Zealand (*Maskell*, 1878), Australia, and probably many other countries. Very injurious. *L. hibernaculorum*, Boisduval, Europe, 1867. Occurs in New Zealand (*Maskell*, 1878). *L. lauri*, Boisduval, Europe, 1867. Occurs in New Zealand and Australia (probably). Mr. Douglas, in the Ent. Mo. Mag. for September, 1891, points out the very minute anatomical characters separating this from *L. hesperidum*, for which it has doubtless been very frequently mistaken. Injurious. *L. maculatum*, Signoret, Europe, 1873. Occurs in New Zealand (*Maskell*, 1878). *L. mori*, Signoret, Europe, 1873. Occurs in New Zealand, rarely (*Maskell*, 1884). An insect which has lately appeared in the same country on grape vines and other fruit trees may, perhaps, turn out to be this species. *L. oleæ*, Bernard, Europe, 1782. Occurs in N. America (*Comstock*, 1880) and New Zealand (*Maskell*, 1884). Very injurious. *L. ribis*, Fitch, N. America, 1859. Occurs in New Zealand (*Maskell*, 1890), on gooseberries, &c. Injurious. *L. rosarum*, Snellen von Vollenhoven, Europe, 1870. Occurs in Australia (*Maskell*, 1891). Injurious.

Pulvinaria camellicola, Signoret, Europe, 1872. Occurs in N. America (*Comstock*, in Rept. Bd. of Hort., California, 1889), New Zealand (*Maskell*, 1878), and Australia (*Maskell*, 1891). Injurious.

Eriococcus araucariæ, Maskell, New Zealand, 1878. Occurs in N. America (*Comstock*, 1880). Unsightly.

Dactylopius adonidum, Linné, Europe, 1767. Occurs in N. America (*Comstock*, 1880) and New Zealand (*Maskell*, 1889). Injurious. *D. calceolariæ*, Maskell, New Zealand, 1878. Occurs in Fiji (*Maskell*, 1889). *D. cocotis*, Maskell, Fiji, 1889. Occurs in the Laccadive Islands (*Maskell*, 1891). Injurious to cocoa-nuts.

Icerya Purchasi, Maskell, New Zealand, 1878. Occurs in Australia (probably the original habitat), California, Cape of Good Hope, Fiji, South Sea Islands, Egypt (perhaps). Very injurious.

I repeat that the foregoing list contains only species which have been personally observed by me. Many others (*e. g.*, *Gossyparia ulmi*, Geoffroy, 1764) have doubtless migrated from Europe to N. America and elsewhere; but I have not seen them myself.

Wellington, New Zealand :

December 26th, 1891.

A LIST OF *NEUROPTERA* COLLECTED IN THE ISLAND OF GUERNSEY.

BY W. A. LUFF.

The following list of Guernsey *Neuroptera* will probably be found capable of considerable augmentation, as there still remain certain streams and ponds which I have not yet searched for this Order of insects. The places I have mostly worked are the small rapid streams on the south coast, and a considerable extent of marshy land on the west coast, near Vazon Bay, called "La Grande Mare." This last is being, however, rapidly drained, the ponds are already filled in, and before many years elapse, this happy hunting ground of the botanist and entomologist will be changed into cultivated fields, or covered with glass houses for the production of grapes and tomatoes.

My best thanks are due to Mr. McLachlan for his kindness in examining and naming most of the specimens. He has added a few species not yet noticed by me, collected by himself in September, 1891 (*cf. ante* pp. 5—6), and by Mr. F. V. Theobald in 1890. These are included in brackets.

My list includes a few species taken in Guernsey many years ago by the late Dr. Mauger.

TRICHOPTERA.

[*Phryganea grandis*, L.—One ♀, Vale Quarry, F. V. T.].

Limnophilus flavicornis, Fab.—One specimen, taken in 1891 on L'Ancrese Common. *L. marmoratus*, Curt.—Two at the Grande Mare, Vazon, on October 11th, 1891. *L. lunatus*, Curt.—Dr. Mauger [Vale Quarry, F. V. T.]. *L. centralis*, Curt.—One at stream near the Grande Mare. *L. affinis*, Curtis.—Dr. Mauger. *L. hirsutus*, Pict.—Not uncommon.

Stenophylax concentricus (Zett.), McLach.—I have taken three specimens.

Halesus radiatus, Curt.—Dr. Mauger.

Sericostoma personatum, Spence.—Not common.

Goëra flavipes, Curt.—One.

Silo pallipes, Fab.—Common at Saints' Bay, Le Gouffre, and Petit Bo Bay.

Beræa maurus, Curt.—Very abundant, small streams on south coast.

Diplectrona felix, McLach.—Common, Saints' Bay, Petit Bo, and Le Gouffre.

Philopotamus insularis, McLach.—Abundant in spring and autumn in small rapid streams Petit Bo, Saints' Bay, and Le Gouffre.

Wormaldia occipitalis, Pict.—Abundant.

Plectrocnemia conspersa, Curt.—Saints' Bay and Petit Bo. *P. geniculata*, McLach.—Not common, south coast.

Tinodes assimilis, McLach.—Common, Saints' Bay.

Rhyacophila septentrionis, McLach.—Common, Petit Bo, Saints' Bay, and Le Gouffre.

Agapetus fuscipes, Curt.—Not uncommon.

NEUROPTERA-PLANIPENNIA.

Micromus variegatus, Fab.—Common. *M. paganus*, L.—One specimen.

Hemerobius limbatus, Wesm.—Common. [*H. orotypus*, Wallengr., R. McLach.].
H. nervosus, Fab.—Not common.

Chrysopa flavifrons, Brau.—Not common. *C. septempunctata*, Wesm.—Common. [*C. perla*, L.—Le Gouffre, F. V. T.].

Panorpa communis, L.—Rare; one specimen taken many years ago; [one ♀, Chêne, F. V. T.].

PSEUDO-NEUROPTERA.

PSOCIDÆ.

Clothilla pulsatoria, L.—Common amongst old books and papers.

Atropos divinatoria, Müll.—Of occasional occurrence.

Psocus variegatus, Fab.—One specimen. *P. bifasciatus*, Latr.—Not uncommon on old walls from July to September. *P. quadrimaculatus*, Latr.—Saw hundreds of specimens on a brick wall a few yards square in Mansell Street, St. Peter Port, during July, 1891. They were huddled together on the lines of mortar between the bricks.

Cæcilius pedicularius, L.—Beaten from hawthorn at Vazon, in October. *C. flavidus*, Steph.—Abundant in September and October. *C. obsoletus*, Steph.—Two, beaten from fir trees on October 18th, 1891. *C. Dalii*, McLach.—Not uncommon.

[*Stenopsocus cruciatus*, L.—R. McLach.].

Elipsocus Westwoodii, McLach.—One beaten from fir, October 18th, 1891.

[*Peripsocus phæopterus*, Steph., R. McLach.].

PERLIDÆ.

Neumora nitida, Pict.—Not uncommon. [*N. variegata*, Oliv., F. V. T.].

EPHEMERIDÆ.

Cloëon dipterum, L.—Common.

Baëtis rhodani, Pict.—I have taken several specimens.

ODONATA.

Sympetrum striolatum, Charp.—One specimen taken at the Grand Mare. *S. flaveolum*, L.—Several, Grande Mare and L'Ancrese. [*L. scoticum*, Donov.—One ♀, Chêne, F. V. T.].

Libellula quadrimaculata, L.—One specimen captured in St. Peter Port Harbour, and brought to me alive.

Orthetrum cærulescens, Fab.—Two specimens taken at the Grande Mare.

Cordulegaster annulatus, Latr.—Not common.

Anax formosus, Lind.—One of our commonest species, Grande Mare and L'Ancrese.

Æschna mixta, Latr.—Two specimens. [*Æ. cyanea*, Müll.—One ♀, L'Ancrese Common, F. V. T.].

Brachytron pratense, Müll.—One ♂, Dr. Mauger.

Calopteryx Virgo, L.—Abundant on the borders of streams, Talbot's Road, near King's Mills; I have not seen it elsewhere. [The examples belong to the "race méridionale" of De Selys, and not to the ordinary English form.—R. McL.].

Pyrrhosoma minium, Harris.—Very abundant at the Grande Mare.

Ischnura elegans, Lind.—Not uncommon.

Agrion pulchellum, Lind.—Common at the Grande Mare. *A. puella*, L.—One ♂.

Guernsey: January 6th, 1892.

ADDITIONAL NOTES ON THE NEUROPTERA OF THE ISLAND OF SARK.

BY ROBERT McLACHLAN, F.R.S., &c.

Since my notes at p. 6 *ante* were published, Mr. F. V. Theobald, B.A., F.E.S., has sent me a few species collected by him in Sark in 1890. I find among them the following species not hitherto recorded from that particular island, including several that have not been noticed in the Channel Islands generally, and which are otherwise interesting.

TRICHOPTERA.

Limnophilus vittatus, F.

Halesus digitatus, Schrk.—1 ♂.

Philopotamus insularis, McLach.—2 examples. It is thus made evident that this form is not confined to Guernsey, and indeed, Mr. Luff informs me that he now remembers having taken the insect some years ago at a very small swift stream at Point du Moulin in the west of the island. Sark is only six miles from Guernsey by sea, but there is often considerable difference in the insect productions of the two islands. As examples, *Argynnis Aglaia* and *Cænonympha Pamphilus* may be cited, both being common in Sark and apparently absent from Guernsey.

Rhyacophila dorsalis, Curt.—Two ♂ of this insect, which is so universally distributed on the British mainland and in Ireland. *R. munda*, McLach.—One ♂. A most interesting discovery. In England it seems to occur only in the Dartmoor and Exmoor districts, and its known distribution on the Continent is confined to the Département de l'Indre, where it has been found commonly by M. René Martin, of Le Blanc.

PSEUDO-NEUROPTERA.

Ephemera lineata, Eaton.—One ♀. A decidedly local species.

Æschna mixta, Latr.—One ♂, taken by Mr. Luff.

Lewisham, London: January, 1892.

ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

(Continued from page 39).

23.—BRACHYCOMA, DSV.

Gen. ch.—Eyes bare, shorter than the sides of the head; antennæ with the second joint short, the third joint thickened, and from one-third longer to twice as long as the second; arista thickened at the base and pubescent; fronto-orbital bristles not extending much below the base of the antennæ; cheeks sometimes ciliated with rows of hairs; facialia almost bare;* abdomen without discal setæ, and marked with sub-semilunar spots; legs with long claws, hairs, and large pulvilli on the fore tarsi of the males only.

This genus is closely allied to both *Tachina* and *Macronychia*. It differs from the former by the shortened second antennal joint, and by the shortness of the row of fronto-orbital bristles; from the latter it may be known by the third joint of the antennæ being wider instead of narrower than the second one, and by the general shape and markings on the abdomen.

1 (2) Arista very shortly pubescent and cheeks ciliated.....1. *devia*, Fln.

2 (1) Arista with base subplumose and cheeks bare 2. *smérinthi*, *sp. n.*

B. DEVIA, Fln.

Forehead, face and epistome prominent; sides of frontalia and face glistening white with black reflections; antennæ with third joint between two and three times as long as the second; arista long, with the basal two-fifths thickened and slightly pubescent; vibrissæ long and numerous; cheeks with a partly double row of small ciliæ, which extend from a little below the termination of the fronto-orbital bristles quite to the bottom of the face; palpi filiform and piceous, with the apices sometimes pale; thorax blue-black, with three longitudinal black lines, the central one broad and often trifid; three external dorso-central bristles behind the transverse groove; abdomen blue-black, the first segment quite black, the others marked on their hinder edges with two large semilunar black spots; wings with apical and outer cross veins both curved, and having a short appendix; legs black. Not uncommon.

B. SMERINTHI, *sp. n.*

Female. Forehead and epistome slightly prominent; eyes widely separated; frontal stripe rather narrower than the sides of frontalia, which, together with face, are white with black reflections; fronto-orbital bristles in a double row, the outer one being very short, consisting only of three or four setæ, the inner row continued to slightly below the roots of the antennæ; antennæ short, brown, with the third joint wide and about one-third longer than the second; arista rather short, with the

* There is a very good figure of one of these flies in Messrs. Brauer and Bergen stamm's Monograph on the "*Muscaria schizometopa*," Taf. vii, fig. 173.

basal third thickened and hairy ; palpi long and clavate, with the bases piceous and apices yellow ; cheeks bare ; vibrissæ few in number ; facialia quite nude ; thorax grey, with three wide black stripes, the middle one trifold in front of the transverse groove, the lateral ones interrupted ; external dorso-central bristles four in number behind the groove ; scutellum grey, with a fugitive black central spot ; abdomen oblong-ovate, convex, grey, tessellated with black and white patches, which assume the form of irregular, black, semilunar spots on the margins of the segments when viewed from behind ; ventral surface dark brown, glistening with white reflections ; wings clear, with apical cross veins deeply curved, and outer ones slightly sinuous ; a short cubital appendix ; legs black, hind tibiæ thinly and irregularly armed with setæ. This species is rather anomalous, it might be placed in the genus *Macronychia*, but differs from the characters assigned to that genus in having the third joint of the antennæ much wider instead of narrower than the second, by the abdomen being convex instead of rather flattened, and by the claws and pulvilli being small instead of large. Herr von Ernst Girschner has described* a *Macronychia flavipalpis* which somewhat resembles this species, but it has clouded veins to wings and very sinuous outer cross veins.

I do not know the male, the only specimen which I have seen was given me by Mr. Bridgman, and was bred from *Smerinthus populi* by Mr. F. Norgate.

24.—MILTOGRAMMA, Mgn.

SPHIXAPATA, p. Rnd.

Gen. ch.—Head large, somewhat swollen and vesicular ; eyes nude ; vibrissæ very small ; antennæ short and narrow, inserted in a deep facial groove, third joint about twice the length of the second ; arista short, nude or subpubescent ; frontalia wide, with broad central stripe ; fronto-orbital bristles short and weak, extending to root of antennæ ; cheeks bare ; facialia thickened, swollen, and pubescent ; thorax and abdomen covered with fine hairs, but having few bristles. The species are parasitic upon *Hymenoptera*, and they chiefly inhabit the south of Europe.

1 (2) Vibrissæ all short and small, and abdominal setæ few and weak...

1. *punctata*, Mgn.

2 (1) Vibrissæ with two setæ longer than the others, and with abdominal bristles moderately developed.....*Sphixapata*, Rnd....2. *conica*, Fln.

M. PUNCTATA, Mgn.

Yellowish-grey ; face silvery-white, with rufous reflections ; frontal stripe reddish-yellow and very wide ; antennæ black-brown, with tips of second joint ferruginous ; palpi yellow ; vibrissæ very small ; thorax with four or five black stripes in front, and three behind, the transverse groove ; scutellum yellowish-brown ; abdomen with three black spots on the second, third, and fourth segments ; wings clear ; legs black, fore tarsi of the males with long claws and hairs. Not common. This species

* Entomol. Nachrichten, October, 1881.

is figured and described by Curtis, in his *British Entomology*. He found it in the Isle of Arran, as well as in the south of England. It is also in the Rev. E. N. Blomefield's and Mr. Dale's collections.

M. CONICA, Flin.

This small species (about 4 mm. long) is more slender in shape than the former, from which it also differs by having two moderate-sized vibrissæ, and narrower frontalia, as well as good-sized setæ on the edges of the abdominal segments. The colour is grey, the frontal stripe is yellow; the face white, with grey reflections; the antennæ brown, the palpi nigrescent, the arista slightly pubescent; the thorax is pale grey, indistinctly striped; the abdomen yellowish-grey, marked with three spots on the first, second, and third segments, the middle spots being often indistinct; the wings have the apical cross veins curved, with a cubital appendix, and the outer cross vein sinuous; the legs are black, with the fore tarsi of the males furnished with long claws and hairs. Very rare.

25.—TRIXA, Mgn.

Gen. ch.—Eyes nude, approximated in the male, and widely separated in the female; fronto-orbital bristles in a double row in both sexes, and only extending to the base of the antennæ; antennæ very short, the second and third joints nearly equal in length, the latter with rounded extremities; arista subpubescent; cheeks bare; facialia ciliated on their lower halves; chin large and hairy; palpi large, and with the ends clavate in the females; abdomen with both marginal and discal setæ; wings with a short but true cubital appendix.

The species of this well-marked genus are difficult to determine, and several of those described by Meigen and others appear to be only varieties. The wing veins are usually more or less clouded with black, particularly the inner cross veins, but this character is very variable in different individuals of the same species; the legs are also always more or less ferruginous, but the femora are often nigrescent, especially upon their upper surfaces.

- | | | |
|-------|---|--------------------------------|
| 1 (2) | Legs with femora nigrescent, and with wing veins clouded... | 1. <i>æstroidea</i> , Dsv. |
| 2 (1) | Legs wholly ferruginous, and wing veins unclouded. | |
| 3 (4) | Scutellum nigrescent | 2. <i>alpina</i> , Mgn. |
| 4 (3) | Scutellum ferruginous | 3. <i>scutellata</i> , Newman. |

T. ÆSTROIDEA, Dsv.

variegata ?, Mgn.

dorsalis ?, Mgn.

Head: sides of frontalia black (very narrow in the male), with white reflections; face white, crossed by black crescentic patches; antennæ and palpi rufous, the latter clothed with white tomentum on the apices; thorax grey, marked by three broad

black bands, the central one being often bifid ; scutellum black or grey ; abdomen tessellated with black and white patches, more or less arranged into transverse bands, sides rufous in the male, ventral surface yellow in the male, and black in the female ; wings with the veins more or less clouded, the thickened inner cross vein forming a dark spot ; legs with tibiæ and tarsi ferruginous, and the femora nigrescent. Meigen states that the antennæ and palpi are nigrescent in his *T. variegata*, but I believe it is only a variety of the above species. *T. dorsalis*, of the same author, seems to be only another variety, in which the wing veins are almost unclouded. Not uncommon ; has been bred by Mr. Billups from *Cheimatobia boreata*.

T. ALPINA, Mgn., ♂.

cærulescens, Mgn., ♀.

This species differs from the former by having the thorax less distinctly striped, the wing veins slightly, or not at all, clouded ; the legs wholly ferruginous, with the exception of the last joints of the tarsi, which are black, as well as the upper surfaces of the fore femora occasionally in the male ; the sides of the abdomen and venter are reddish-yellow in the male (as in *æstroidea*), but blue-black in the females. Not common ; in Mr. Dale's and Miss Decie's collections.

T. SCUTELLATA, Newman.

I have introduced this species into my list upon the authority of the late Mr. E. Newman, by whom it was briefly described ;* I have not seen a specimen, and doubt whether it is a distinct species : the only characteristic feature is the ferruginous scutellum ; and, as Macquart says, that this part is sometimes rufous at the apex in *T. cærulescens* (*alpina*, ♀), I suspect it is only a variety of that species.

26.—CLYTIA, Desv.

Gen. ch.—Head large ; eyes bare ; forehead and face prominent ; frontalia and cheeks wide in both sexes ; frontal stripe narrow ; fronto-orbital bristles only extending to a little below the root of antennæ ; vibrissæ small, facialia almost bare ; antennæ short, second joint small, third joint from half to twice as long again as the second ; arista nude, with second joint a little prolonged ; abdomen subglobose in the males, with setæ only on the margins of the segments ; wings with the first posterior cell ending near the apex. The little flies belonging to this genus are of a yellowish-grey colour, with a more or less luteous abdomen.

- | | | |
|-------|-------------------|---------------------------------|
| 1 (2) | Legs black..... | 1. <i>continua</i> , Pnz. |
| 2 (1) | Legs yellow | 2. <i>rotundiventris</i> , Fln. |

C. CONTINUA, Pnz.

Frontalia and face golden-yellow in the male, and yellowish-white in the female ; frontal stripe brown, very narrow in the male, and about twice as wide in the female ;

antennæ black, third joint ovate, and about half as long again as the second; thorax yellow-grey, with four narrow black stripes; scutellum grey; abdomen yellow, translucent, oblongo-rotund, with glittering white reflections in the males, and having the hinder segments somewhat nigrescent; wings yellow at the base, with the fourth longitudinal vein bent at an angle, and the outer cross vein sinuous; legs black. Very rare.

C. ROTUNDIVENTRIS, Flin.

This species bears a general resemblance to the former, but differs by having the antennæ and legs (with the exception of the tarsi) yellow; the wings with the fourth longitudinal vein bent in a curve, and the outer cross vein straight; the abdomen of the male is also more globular, and sometimes marked with black spots; the scutellum is partly or wholly luteous; the antennæ have the third joint longer and narrower than in *C. continua*, and the first and second joints always yellow; the third is sometimes nigrescent, and fully twice as long as the second joint; in the female the abdomen is ovate and pointed, and with the dorsum and apex grisescent. Rare; in Mr. Dale's collection.

(To be continued). 93

Æschna borealis, Zett., in the Schwarzwald, and a correction.—In the "Revue d'Entomologie," for 1886, pp. 126—136, I published a List of the *Neuroptera* collected during an excursion to the Schwarzwald in 1885. At p. 136 *Æschna mixta*, Latr., is recorded from the Feldberg. To-day I have quite accidentally discovered that this is an error, and that the example (a ♂) is really *Æ. borealis*; probably a new locality for this arctic and alpine species. *Somatochlora arctica*, Zett., was taken on the same mountain: it and *Æ. borealis* seem to be frequently associated in their habitats. Having discovered my error, it is distinctly advisable to publish the correction.—R. McLACHLAN, Lewisham: January 22nd, 1892.

Uncommon Micro-Lepidoptera in 1891.—

Spilonota pauperana.—About thirty examples of this moth were taken amongst a rose (I believe it to be *Rosa hystrix*) on the 4th and 5th of May; the majority were obtained by beating, and a few netted flying round the rose bushes late in the afternoon. Many of the specimens were not in good condition, which would tend to show this species is not retarded in its emergence by a backward season. I hear this insect has been reared from larvæ feeding on the blossoms of rose, so no doubt its life-history will before long be published.

Gelechia osseella.—This was met with sparingly on June 26th and July 2nd. From what could be observed of its habits, it appears to have a later time of flight than most of the *Gelechiæ* that have come under my notice, none being seen much before sunset. It is almost impossible to distinguish from a *Coleophora* or *Elachista* on the wing, but when in repose is not likely to be mistaken for any other species. I have hunted diligently for the larvæ, but unfortunately so far without finding any trace of it, or being able to form an opinion of its food-plant.

Chrysoclysta bimaculella.—June 20th, one specimen beaten from a hedge at Eltham. The prevailing idea appears to be that the larva of this species feeds in

the bark of willows, there certainly are many willow bushes in the hedge in question, though it has been suggested by one of the greatest authorities on the *Tineina*, that it may be similar in its habits to *Schranckella* (i. e., a leaf miner), and also as there are such great difference between British and Continental *bimaculella*, they may prove distinct species.

Elachista cingillella.—One by beating August 5th, Lee. My thanks are due to Mr. C. G. Barrett for determining this rather obscure insect.

The localities for the first two species are known to my personal friends, but are not made public, as in the one I am only able to collect by the courtesy of the owner, and in the other at the risk of being ordered off for trespassing.—B. A. BOWEN, Lee, Kent: *January 15th*, 1892.

Gelechia (Anacampsis) sparsiciliella, Barrett, not a distinct species.—I have been favoured by Mr. Eustace Banks with an opportunity of carefully examining a long series of perfect, and beautifully set, specimens of *Anacampsis anthyllidella*, reared by him at Corfe Castle, Dorset. These were sent with the object of proving to me that the characters upon which I relied for separating *A. sparsiciliella* as a distinct species are really not reliable, and in this my friend is quite successful. The specimens differ among themselves in the breadth of the fore-wings, and the consequent acuteness of their apices, and also in the presence or absence of pale patches at the base of the costal and dorsal cilia, which give that portion of the margin of the fore-wing an indented appearance; and although these pale spots are usually grey in the Dorset specimens (when present), they, in some instances, vary to ochreous, and, in fact, include the characters of the Pembrokeshire specimens. The name of *sparsiciliella* (*ante* vol. xxvii, 7) must, therefore, be allowed to drop.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E.: *February 15th*, 1892.

Moma Orion: delay in emergence of.—In 1889 I received seven pupæ of this insect. Five emerged in the spring of 1890, and two in the spring of last year. I have not noticed any previous record of the holding over of this insect.—ARTHUR J. CHITTY, 33, Queen's Gate Gardens, S.W.: *January 8th*, 1892.

Late appearance of Odonestis potatoria in 1891.—I was much surprised to take a full grown larva of *Odonestis potatoria* on the Sandhills at Deal on August 13th last year. The larva spun up shortly after its capture, and the perfect insect (a ♀) emerged during the second week of September.—ID.

Nacerdes melanura in London.—This insect, which Mr. Champion records from King's Cross Railway Station, appears to be not uncommon in London. I have five specimens taken at various times; three in July, 1887, and one in August, 1890, from the Embankment, and the other last July from St. Katharine's Docks. There is a slip or misprint in my note inserted in the January number—"had recently blown down," should be "has recently been blown down." The tree alluded to was standing in October, 1889 and 1890, when I took *Tetratoma fungorum* from the *boleti* growing on it. Last October the tree was lying on the ground, and the *boleti* were apparently untenanted, though I had left a large number of insects in October, 1890.—ID.: *February 8th*, 1892.

Black variety of Homaloplia ruricola.—In the November No. of the Ent. Mo. Mag. Mr. A. Cottam records the capture of a black variety of *Homaloplia ruricola*. At the end of June, 1891, whilst collecting on the chalk hills at Portsdown, Hants, I met with a specimen of this variety walking on the chalk there, but, like Mr. Cottam, I was unaware that my capture was of any importance, and did not search for any more, or possibly the type may have turned up there. My insect has been very kindly identified for me by Mr. Waterhouse, of the British Museum, South Kensington, who informed me at the time that the variety was not often met with. I have not seen the specimens alluded to by Mr. Cottam, but hope to do so on my next visit to the Museum.—C. COLES, 61, Barrington Road, Brixton, S.W. : January, 1892.

Bagous petro, Herbst.—In my “British Coleoptera,” vol. v, p. 288, I have described *B. petro* as from various localities: it turns out, however, that only the specimen recorded from Askham Bog (which I took myself, in company with Archdeacon Hey, on August 10th, 1880) is really to be referred to this species; this specimen, therefore, is unique as British, and is a very interesting capture, as it represents a subgenus new to Britain, viz., *Helminthimorphus*, Cussac, which is distinguished by having the first joint of the club (the ninth of the antennæ) glabrous and shining, and as long as all the following united. In shape it very much resembles the *B. limosus* of our collections, which is synonymous with *B. petrosus*, W. C.; it is to this latter species that the other localities mentioned under *B. petro* must be referred, the similarity of name and shape has caused the confusion. Dr. Sharp, in the second edition of his “Catalogue of British Coleoptera,” p. 31, has fallen into the same mistake, and gives *B. petro* instead of *B. petrosus* as synonymous with *B. limosus*.

It will be noticed that in my description of *B. frit* I have remarked on a discrepancy between the account of the insect as given by different authors who have adopted the name. On examining into the matter I find that we undoubtedly have two species, and that I have omitted to describe separately the species with long tarsi, which is named by Bedel as *B. claudicans*, Boh. Bedel gives the synonymy of the species as follows:—

HYDRONOMUS (BAGOUS) FRIT, Herbst.

subcarinatus, Gyll.

CLAUDICANS, Boh.

muticus, Thoms.

longitarsis, Thoms.

frit, H. Brisout.

and he describes *B. frit* as having the first, second and third joints of the posterior tarsi elongate and subequal in length, and *B. claudicans* as having the second and third joints of the posterior tarsi as long as, or a little longer than, broad, but both evidently shorter than the first. On the other hand, Thomson's description of *B. frit* (Skand. Col., vol. vii, p. 183) evidently refers to the species with the *short* tarsi, and in vol. x, pp. 184, 185, he describes at length two separate species, *B. muticus* and *B. longitarsis*, of which the latter, as its name implies, has elongate tarsi, whereas the former is described as having the second joint of the tarsi subtransverse and not

narrower than the third ; and yet Bedel gives both *B. muticus* and *B. longitarsis* as synonyms of *B. claudicans*, which has short tarsi. In our British collections there are evidently two species ; the order, however, of Bedel appears to have been reversed by British Entomologists, the species with short tarsi standing under *B. frit*, and the species with long tarsi under *B. subcarinatus*, which Bedel gives as a synonym of his *B. frit*, which also has long tarsi.

It appears to be impossible to tell which is the true *B. frit* of Herbst. I wrote to Mr. Champion (who has to-day furnished me with British examples of the species) on the subject, and he answers as follows :—"I cannot find anything in Herbst, Schönherr or Gyllenhal to help you. It is all very involved. Brisout (Ann. Soc. Ent. Fr., 1863, pp. 502, 503) described our species with long tarsi under the name of *subcarinatus*, Sch., particularly mentioning the tarsi as 'très grèles,' but he says the species may be the true *frit*, Herbst." The *B. frit* of Brisout, however, according to Bedel (who gives the reference to Ann. Fr., 1863, p. 503) is synonymous with *B. claudicans*, which has the shorter and thicker tarsi.

The above is a good instance of the utter confusion that the best authors sometimes fall into over a doubtful species, and the present system of nomenclature on the Continent, which seems to be getting worse and worse, only makes confusion more confounded.

If it could be done, I would propose to abolish the name of *B. frit* altogether, and to adopt Thomson's name of *longitarsis* for the species with long tarsi, and a new name, *brevitarsis*, for the species with short tarsi. It is only by some such alteration that we can avoid the difficulty.—W. W. FOWLER, Lincoln: *February 18th*, 1892.

Review.

AN ELEMENTARY MANUAL OF NEW ZEALAND ENTOMOLOGY, being an introduction to the Study of our Native Insects ; with 21 Coloured Plates : by G. V. HUDSON, F.E.S. 128 pp. 8vo. London : West, Newman & Co. 1892.

A bad habit has latterly sprung up amongst writers of books on Natural History, and especially on Entomology, viz., that of styling their productions "Manuals," "Hand-Books," or "Text-Books," when they are nothing of the kind. A better title for this work would have been "Illustrations of New Zealand Insects, and their Transformations." It commences with a few generalities, followed by a somewhat lengthy chapter on collecting. The remaining portion of the text is chiefly explanatory of the plates, which are executed in the best style of chromolithography from the author's drawings ; and these latter are generally correct, but sometimes fail where details of structure (such as neuration, &c.) are concerned. As a book of illustrations it will enable beginners in the Colony to name such species as are figured. The really valuable features in the work are the accounts and figures of the transformations of most of the species treated on, and their habits. Here the author has done good work, and of lasting scientific interest, and this part is mainly quite original, for very little has been published on the habits and transformations of some of the most common species, and he here shows his powers of close observation.

Obituary.

Henry Walter Bates, F.R.S.—It is with profound regret we announce the death of Mr. Bates on February 16th, after a short illness, in his 68th year. He was born at Leicester on February 8th, 1825, where his father was engaged in one of the staple industries of the town, and where he was principally educated with a view to commercial life: and his school education was supplemented by attending evening classes, where he probably acquired his knowledge of classics and the rudiments of modern languages. Early in life he evinced a taste for Natural History, Botany at first, and subsequently Entomology, and several notes by him on British *Coleoptera* were published in the "Zoologist" for 1843 and 1844. Business was distasteful to him, and the desire for foreign travel grew with his years. At one time we believe this desire nearly culminated in emigration to Australia with his life-long friend, Mr. Stephen Barton, of Bristol; but the project fell through. In 1844 or 1845 he made the acquaintance of Mr. A. R. Wallace, who was then engaged as a tutor at Leicester, and this acquaintanceship proved fraught with events concerning his future career. In April, 1848, the two friends set sail for Pará, at the mouth of the Amazons, on a memorable Natural History expedition, proposing to pay their expenses from the sales of the specimens collected, Mr. Samuel Stevens being appointed their agent in London. They soon had to contend with sickness; Bates was attacked by yellow fever, but happily recovered; Wallace lost his brother from the same fell disease. The two explorers separated after a short time; Bates occupied himself principally with the main stream of the Amazons, Wallace diverted to the Rio Negro, and returned in 1852, whereas Bates remained until 1859, having spent 11 years on the Amazons, ascending to a point over the Peruvian frontier, distant 1800 miles from the Atlantic, and frequently encountering great dangers and hardships; steam was then unknown on the Amazons, and distances that may now be covered in a few weeks then took several months.

We do not further intend to follow the explorer in his travels. A most vivid description of them and of the Natural History of the region was published by him in 1863, under the title, "The Naturalist on the River Amazons," originally in 2 vols. (and translated into several European languages), and subsequently in a somewhat modified form in one vol., of which there have been numerous reprints, and which, even to his death, was a steady source of income to its author, so continuous has been its popularity. The collections made were enormous, and the biological, ethnological and geographical information obtained was immense. Popular and remunerative as was this work, its author was wont to say at the time that he would rather spend another 11 years on the Amazons than write another book.

Being without any permanent occupation, it indeed seemed very probable at this time that Bates would undertake another exploring expedition; but an event occurred which finally caused him to abandon any such idea. He married a Leicestershire lady, and from that time he remained at home. His work attracted the attention of Sir Roderick Murchison, who then had great influence at the Royal Geographical Society, and who became his warm friend and patron. A vacancy occurring in 1864 in the Assistant Secretaryship of the Society, the post was offered to Bates, who accepted it and retained it to the last, for he was on duty up to a very short time before his death.

The change from a nomad life to the close routine of office work must have been heavily felt by him, but he at once settled down quietly to his new duties, his early business experience and his eminently methodical habits no doubt aiding largely. His services to the Geographical Society will be fully acknowledged elsewhere; but no pen can recount his innumerable acts of kindness and words of wise counsel offered to the hosts of embryo explorers who sought, and never in vain, his advice. His position at the Society materially aided Entomology in an indirect manner. It was his practice to equip intending explorers with apparatus, and to instruct them in collecting, and by this means he added vastly to his collections and to those of others.

During his sojourn on the Amazons he put together an enormous mass of biological notes in MS., copiously illustrated by sketches, for he was no mean artist. These notes still exist, but (with the exception of those on the *Termitidæ*) unpublished. As a philosophical Naturalist he was a profound student of the bearings of the phenomena he witnessed in his investigations of the rich Amazonian Fauna on the question of the Origin of Species and cognate matters, and a close friendship existed between him and Charles Darwin, as the writings of the latter abundantly show. That he was a thorough evolutionist is certain; that he remained a believer in Natural Selection as the sole factor in the Origin of Species may be not so certain. In 1862 he produced his notable memoir on Mimetic Resemblances, as illustrated by the *Heliconidæ* ("Contributions to an Insect-Fauna of the Amazons Valley, *Heliconidæ*," Trans. Linn. Soc.), which took the world by surprise. There is, we venture to say, reason to believe that, although he did not alter his faith in the main points advanced in that memoir, he deplored the extravagant lengths to which his reasonings, as detailed therein, were made subservient to trivialities by some who succeeded him. Otherwise he devoted all his leisure to Systematic Entomology. At first the *Rhopalocera* engaged his attention, and especially the *Papilionidæ* and *Erycinidæ*, his Catalogue of the latter (published in the Journal of the Linnean Society) having been adopted as a basis by succeeding authors. Many years ago he sold his collection of Butterflies to Messrs. Godman and Salvin, and thenceforth occupied himself with *Coleoptera*, and especially *Geodephaga*, Lamellicorns, and Longicorns. On these groups his publications have been very numerous, for they were not confined to his Contributions to the Fauna of the Amazons Valley, but concerned the whole world, some as papers in Transactions and Periodicals, many in the published accounts of explorations, and lastly in the "*Biologia Centrali Americana*," to the entomological portion of which his contributions form a prominent feature. Failing health induced him to sell his Longicorns to M. René Oberthür shortly before his death, and the rest of his collections are likely to leave our shores unless some means can be found for retaining them. For a considerable time he had been engaged on a new classification of the *Carabidæ* on certain oral structures. This was to have been his *magnum opus* as he himself used to say; but it was never to be completed. It is impossible for us to give a list of his works. There is scarcely a volume of this Magazine in which his contributions do not appear. Our first No. in 1864 commenced with a paper from his pen, and one of the last papers he wrote was published in our No. for November, 1891.

In 1861 he was elected a Member of the Entomological Society of London, of which he was President in 1868 and 1869, and again in 1878. In 1871 he was ad-

mitted to the Linnean Society under a rule that enables the Council to waive the pecuniary contribution in especial cases ; in 1863 he had received a like distinction at the hands of the Zoological Society. In 1881 he became a Fellow of the Royal Society. His official position caused him to be Secretary of the Geographical Section of the British Association for many years, but he declined the honour of being President of the Section. The late unfortunate Emperor of Brazil bestowed upon him the Order of the Rose, a distinction rarely conferred upon foreigners.

For many years Mr. Bates had a cottage at Folkestone, and it was his wont to repair thither on all available opportunities, on which occasions the old collecting instincts asserted themselves strongly. Ever since his return from the Amazons he had suffered from attacks of dyspepsia, induced by the hardships and bad food of a lengthened period in his wanderings. His robust constitution enabled him to throw off these recurrent attacks ; but a short time ago symptoms of some organic gastric mischief appeared ; upon these influenza supervened, and his last illness was of brief duration. He leaves a widow, three sons (two of whom are in New Zealand), and a married daughter to deplore his loss ; another married daughter predeceased him about a year ago.

In the foregoing notice no mention has been made of Bates as a *littérateur*. His work (chiefly anonymous) in this line was enormous at one time, and he was on the staff of several important publications, and especially the "Athenæum." He was a many-sided man, and no one writing with one point in view can do justice to his memory. It is not the intention of one who for many years met him almost daily to enlarge upon his social qualities. Suffice it to say that in these respects he was nowhere seen to better advantage than at the "Secretarium" of the British Association after the day's work was over. *Vale!*—R. McLACHLAN.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY—ANNUAL MEETING: *February 1st, 1892.*—Mr. W. G. BLATCH, President, in the Chair.

Mr. W. D. Spencer, Regent Place, Birmingham, was elected a Member.

The Secretary read the Annual Report of the Council, which showed the number of members to be about the same as at the last Annual Meeting ; and the Treasurer presented his Annual Report, showing a balance in hand of £4 18s. 4d. The following Officers for the ensuing year were elected :—President, Mr. W. G. Blatch, F.E.S. ; Vice-President, Mr. G. H. Kenrick, F.E.S. ; Treasurer, Mr. R. C. Bradley ; Librarian, Mr. A. Johnson ; Auditors, Messrs. Herbert Stone F.L.S., and A. Stone Wainwright ; and Hon. Sec., Colbran J. Wainwright ; Messrs. G. T. Bethune-Baker, F.L.S., F.E.S., and G. W. Wynn were also elected on the Council. Mr. C. Runge showed cocoons of *Trochilium apiformis*, containing larvæ, which he had dug out of poplars, near the roots, at Arley.

February 8th.—Social Meeting.—By invitation of the Council, the members and a few friends met together at the Grand Hotel, when a pleasant social evening was spent. A number of interesting books and insects were shown.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *February 8th*, 1892.—

Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Messrs. Henry Champ and W. H. Holt were elected Members.

Mr. W. E. Sharp read a paper, entitled, "Some remarks on the *Hydradephaga* of the District," illustrated with specimens and large coloured diagrams. The President exhibited fine varieties of *Ennomos angularia*. Dr. Ellis, *Pulvinaria camellicola* (a rare species of *Coccus* from camellia trees). Mr. Collins, four specimens of *Deilephila galii*, bred by him from twenty-two larvæ taken on *Epilobium angustifolium*, at Warrington, in 1889, the specimens were small, and were the only perfect ones bred; and a variety of *Noctua festiva*, with distinct black transverse lines on a uniform ground colour. Mr. Schill, *Hydrous angustior* from Milan, flying round electric light. Mr. Stott, a collection of local *Hydradephaga*; and Mr. Pierce, *Agrotis candellarum*, from Saxony, and its British form, *Ashworthii*.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *January 28th*, 1892.—W. H. TUGWELL, Esq., President, in the Chair.

The Treasurer submitted his Financial Statement, from which it appeared there was a balance of £48 to the Society's credit; the Council's Report was read by the Secretary. The Election of Officers resulted as follows:—Mr. C. G. Barrett, F.E.S., as President; Messrs. J. Jenner Weir, F.L.S., F.Z.S., F.E.S., and R. South, F.E.S., as Vice-Presidents; Mr. E. Step as Treasurer; Mr. W. West as Curator; Mr. D. J. Rice as Librarian; Messrs. H. W. Barker and A. Short as Secretaries; and Messrs. T. R. Billups, F.E.S., J. T. Carrington, F.L.S., C. Fenn, F.E.S., F. W. Frohawk, F.E.S., J. Henderson, W. H. Tugwell, and J. W. Tutt, F.E.S., as Council. Mr. W. H. Tugwell read his Presidential Address, and the Meeting closed with votes of thanks to the various Officers.

February 11th, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. J. Jenner Weir exhibited several species of the genus *Cymothœ*, viz., *theodata*, *Emilius*, *cænis*, and *Theobene*, and read notes with reference to the extreme sexual differences; he also exhibited specimens of *Pieris napi*, L., and allied forms, which by some entomologists were considered distinct species or subspecies, and by others mere local varieties, and remarked that the object of the exhibition was to show the effect of environment and seasons of emergence on the intensity of colouration. Mr. Austin exhibited an extremely rare form of *Lycæna bellargus*, Rott., having the brilliant blue colour entirely suffused with black scales, and another example with beautiful markings on the upper side, both were taken at Folkestone. Mr. Tutt, a bred series of *Hadena pisi*, L., varying from grey to a deep purplish-red; three specimens of *H. dissimilis*, Knoch, one with longitudinal striations; a small specimen of *Arctia villica*, L., the spots being very much reduced; three specimens of *Cerastis vaccinii*, L., one having the outer margin curved as in *spadicea* or *ligula*; *Amblyptilia acanthodactyla*, Hb., and *A. punctidactyla*, Haw., bred from larvæ, and remarked that it was considered by some that these were distinct species. Mr. R. Adkin showed smoky varieties of *Nemeophila plantaginis*, L. Mr. Farren, a long series of *Peronia variegana*, Hb., taken at Scarborough in September, and remarked that there were

plenty of the ordinary form of the species, but the black form was as plentiful as the ordinary form. Mr. Billups, a larva found feeding on tomatoes from Teneriffe. Mr. Tutt expressed an opinion that it was *Prodenia littoralis*, Bdv. Mr. Herbert Williams, a dark variety of *Calymnia trapezina*. Mr. H. Wallis Kew read a paper "On the dawn of Memory in the Animal Kingdom," and in the discussion which followed Messrs. Dobson, Tutt, Weir, Barrett, and Wallis Kew took part.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *February 10th, 1892.*—FREDERICK DU CANE GODMAN, Esq., F.R.S., President, in the Chair.

The President nominated Lord Walsingham, LL.D., F.R.S., Mr. Henry John Elwes, F.L.S., and Dr. D. Sharp, M.A., F.R.S., Vice-Presidents for the Session 1892—93. Mr. Thomas W. Cowan, F.L.S., F.G.S., of 31, Belsize Park Gardens, Hampstead, N.W.; Mr. Wm. Farren, of Union Road, Cambridge; Mr. Philip de la Garde, R.N., of H.M.S., "Pembroke," Chatham; the Rev. J. A. Mackonochie, B.A., of St. Botolph's, Lincoln; and the Rev. A. Thornley, M.A., of South Leverton Vicarage, Lincolnshire; were elected Fellows of the Society.

Mr. E. Meyrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Mr. Barnard, showing the extraordinary variation of this Tasmanian species, all the males of which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Tutt, Mr. Poulton, and Mr. Jacoby took part in the discussion which ensued.

Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris.

Mr. G. T. Porritt exhibited a series of specimens representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere.

Mr. Tutt exhibited a series of *Hadena pisi*, comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines. Three distinct forms of *Hadena dissimilis*; red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila Penziana*. With the exception of the last-named, which was taken in Anglesey, all the specimens were taken or bred by Mr. Tunstall in the neighbourhood of Warrington.

The Rev. Dr. Walker exhibited specimens of *Arge Litea*, *A. Lachesis*, *A. Psyche*, *A. Thetis*, and other species of the genus from the neighbourhood of Athens; also specimens of *Argynnis Phæbe*, taken in Grenada in May, 1891.

Mr. W. Farren exhibited a series of specimens of *Peronea variegana*, var. *cirrana*, and *P. Schalleriana*, var. *latifasciana*, from Scarborough; *Eupæcilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge.

Mr. G. A. J. Rothney sent for exhibition a number of species of ants collected by himself in Australia, in May and June, 1886, which had recently been named for him by Dr. Forel.

Mr. C. O. Waterhouse read a paper, entitled, "Some observations on the Mouth Organs of *Diptera*," which was illustrated by numerous diagrams. A long discussion ensued.

Mr. E. Meyrick read a paper, entitled, "On the Classification of the *Geometrina* of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt, and Mr. Distant took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE BUTTERFLIES OF RAWAL PINDI AND THE MURREE HILLS (PUNJAB).

BY N. MANDERS, F.E.S.,
Surgeon-Captain, Medical Staff.

The following is the result of two seasons' collecting at Pindi, and one summer in the Murree Hills. Probably other species remain to be added, but my time is limited, and my peregrinations restricted to a few miles round my station for the time being.

Rawal Pindi is situated in the north-west corner of the Punjab, and about twelve miles from the outlyers of the Murree Hills. At first sight it looks as uninviting from an entomological point of view as any other place in the Punjab, being very hot, flat, and with very little vegetation. In certain respects it is an extremely interesting place, as its proximity to the hills and its elevation, 1700 ft., enable the more hardy hill species, both animals and plants, to maintain a precarious existence, and at the same time its heat and aridness permit the survival of a few entirely desert species. It is situated, in fact, just where hill and plain species struggle against adverse climatal conditions. As instances of the former, I may mention *Vanessa indica* and *Lethe Dyrta*, which are represented by occasional specimens only; and of the latter, species of the genus *Taracolus* survive in very few numbers.

Last year (1890) the weather, comparatively speaking, was cool, and consequently the hill species were fairly numerous, especially *Gonepteryx rhamni*, *Colias Fieldi* and *Hyale*, species one would scarcely expect to meet with in the plains; though I have found *C. Fieldi* as far south as Mooltan.

This year, on the contrary, was noted for its long continued and intense heat; and very little rain, whether under these conditions the desert species preponderated I do not know, as I was enjoying the temperate breezes of the Himalayas. The tenure of existence is held so feebly, that any untoward circumstance seems likely to throw back

or even exterminate some species, until under further favouring circumstances they are recruited by stragglers from the neighbouring hills or plains, as the case may be. One such event occurred this year with the arrival of the locusts. The mature locusts appeared in the cold weather, but did little harm to the park and the garden of the mess bungalow, almost the only two places where butterflies are to be found. A word or two regarding these. The former comprises some fifty acres, laid out with two or three artificial ponds. No garden plants are grown, and the principal trees are *chiar* (*Pinus longifolia*), acacias (*mimosa* and *arabica*), and "sessum," which is by far the most abundant. Grass is grown wherever practicable, and is used for the cavalry and artillery horses in the station. In the mess garden are grown many varieties of English flowers, which prove very attractive to butterflies, and more especially the Sphinx hawk moths, *convolvuli*, *livornica* and *celerio*. At the commencement of May the young locusts arrived in such swarms that they practically ruined the garden, and eat up every green thing in the park. It is difficult to give an idea of their masses; they advanced across the country like a huge army, devastating everything as they went, and fouling wells and water courses by falling into them in thousands. One is so accustomed from one's youth to regard the locust as a flying insect only, and to see it constantly depicted as such, that one is more or less unacquainted with it in its earlier stages. At first it is entirely black, and then changes to a fine green colour, ornamented with black and yellow. It is wingless, but crawls about everywhere, trees, walls, and the insides of tents are covered with their slowly moving columns, and seemingly they eat everything except metal. It is in this stage that they encumber the railway lines to such an extent as to stop the trains. I experienced this once myself when travelling from Lahore to Pindi. We were proceeding up a slight incline, and gradually got slower and slower until we stopped, and the rails had to be swept clear. Apparently the body of the locust contains a substance of an oily nature, and the crushed bodies on the hot rails prevented the wheels from catching. The smell from their crushed and half-cooked oily bodies (the weather was extremely hot) was indescribably nasty.

In the middle of May, I went to Kalabagh, in the Murree Hills and twenty miles north of Murree. The road for the whole distance was infested by brown locusts in the flying state, and in places the destruction they caused was enormous. Hundreds of acres of trees, which should have been green with their summer foliage, assumed an autumnal brown from the clinging insects, and in a few hours, or by

the next day, were as bare as after the first frosts of winter. I noticed that other insects made a speedy clearance when the locusts were numerous. No doubt enormous numbers of larvæ and pupæ were devoured, and I notice that butterflies have been unusually scarce in Kulu, and this is doubtless due to the same cause.

Probably, many butterflies, which were unusually scarce or absent this season, yet remain to be added to my list. Perhaps some other entomologist, who has collected in these hills, will kindly favour us with a list of the species I have not yet met with. The Himalayas, or, at any rate, that part of them known as the Murree Hills, are so well known that little need be said about them by way of description. Murree is 7,700 ft. above the sea, but so near the torrid plains that insects partial to this elevation do not largely flourish. Kalabagh, where I resided for five months, is exactly 8000 ft. alt., and being further in the hills is very central for collecting purposes.

At this elevation two species of pine, *P. longifolia* and *P. excelsa*, and a fir, *Abies Webbiana*, flourish very extensively. The other trees are mostly oaks and chestnuts. Undergrowth is thick in places, but the forests are so intersected by wood cutters' paths, that progression is easy, were it not for the steepness of the hill sides, which are frequently precipitous. It is not difficult to pass in a short time from 9000 or 8000 ft. to 3000 ft., but travelling upwards is tedious and exhausting, though it is interesting to note the gradual change of the flora and insect fauna at the different elevations. The last season was very deficient in rainfall: usually the rains begin about the first week in July, and end the middle of September. Life is then passed in cloudland, with limited view of one's surroundings, and everything is damp and miserable. After the rains the weather becomes cool and pleasant, and the views of the distant snows magnificent. The butterflies are of a decided European character, and often the result of a day's collecting will show only specimens which one is perfectly familiar with at home.

Abbottabad is forty miles from Murree, and almost due north of it, with an elevation of 4200 ft.

The other places I have mentioned are in the hills between these two stations.

Species occurring at Rawal Pindi I have marked with an asterisk.

**Danais Liminæa*, Cram.—Very common in gardens in April and May, and again after the rains; occurs also on the lower ranges of hills and up to 7000 ft.; it is abundant also in November at Pindi. **D. Genutia*, Cram.—Abundant at low elevations at the same seasons as the above. **D. Chrysippus*, L.—Not by any means common, and decidedly rare above 7000 ft.

**Lethe Dyrta*, Feld.—This is one of the few hill species that manage to exist sparingly at Rawal Pindi; it is uncommon even in the Murree Hills.

Amecera Schakra, Koll.—Abundant during the rains, and in the autumn months, flying about the rocks and bare hill-sides.

Hipparchia Parisatis, Koll.—Common between Bugnota and Abbottabad in the autumn. It settles in the most inaccessible and dangerous spots, and from its resemblance to its surroundings is difficult to see. I consider the pursuit of *H. Parisatis* over these precipitous hill sides to be distinctly dangerous: one stands a good chance either of a sunstroke or a broken neck.

Aulocera Padma, Koll.—Abundant above 7000 ft. in June, and at the commencement of the rains; it then disappears, and there is a small autumn brood. The species here is remarkably constant. *A. Swaha*, Koll.—This comes out during the rains, replacing the above species, and continuing all through the autumn. It has very much the same habits as *Padma*, and, like it, is not found below 7000 ft. *A. Saraswati*, Koll.—One specimen only, on a rocky hill near Bugnota, in September. I was surprised not to find the species more abundant, as it is said to swarm in favoured localities.

**Ypthima Nareda*, Koll.—Occurs sparingly in the park at Rawal Pindi, and also throughout the Murree Hills, during the summer months.

Callerebia Nirmala, Moore.—A variable species, occurring commonly in the rains, and disappearing about the middle of September. It is not, I think, found below 7000 ft. It has very much the habits of the English "meadow brown."

**Melanitis Leda*, L.—Not uncommon at Pindi, but I have not met with it in the hills.

**Atella Phalanta*, Dr.—Common at Pindi, but not in the hills.

Sephisa dichroa, Koll.—I have seen this at about 3000 ft. elevation, on the Kashmir road below Kalabagh.

**Junonia Asterie*, L.—Rare, at Pindi, and in the neighbouring hills. **J. Lemonias*, L.—Occasionally at Pindi in the Park; I have not met with it in the hills. **J. Hierta*, F.—Very common at Pindi, and up to 6000 ft.; it delights in the hottest sunshine, and is found almost throughout the year. **J. Orithyia*, L.—Common at Pindi and Abbottabad, and up to 6000 ft.; common nearly all the year round.

Neptis Astola, Moore.—Very common everywhere in the summer months, and rains. A second brood occurs in autumn, but the specimens are few in number. *N. Ophiana*, Moore.—Common at low elevations, 3000 and 6000 ft., but not occurring before the latter elevation.

**Hypolimnas Bolina*, L.—Occasional specimens occur in gardens at Pindi, but I have not noticed it in the hills.

**Argynnis Niphe*, L.—Common at Pindi in the spring and autumn; the female greatly resembles *D. Chrysippus* on the wing. *A. Childreni*, Gr.—I have taken this at Doonga Gali, 7500 ft., and at Kalabagh, 8000 ft., as well as on the Kashmir road, 3500 ft. I have seen specimens from the immediate neighbourhood of Murree. It occasionally soars in considerable numbers over the tops of the highest forest trees.

A. Kamala, Moore.—Very common, especially before the rains, and female specimens may be found late in September. It is fond of settling on the damp margins of the hill streams; twenty or thirty collected together in one spot is a lovely sight. **A. Lathonia*, L.—Abundant in June, and specimens may be found throughout the summer months; it occurs again in the autumn.

Limenitis Trivena, Moore.—Common before the rains, and almost always in the neighbourhood of water, and not below 6000 ft. The species in this neighbourhood is very constant, and shows little sign of variation.

Euthalia Patala, Koll.—Common in the neighbourhood of Murree, but not in the Galis. It occurs on the Kashmir road near Kalabagh, at about 4000 ft. elevation.

**Pyrameis cardui*, L.—Abundant everywhere. **P. indica*, H.—Occurs very sparingly at Pindi, a locality where I should certainly not have expected it; it is common in the hills, generally on the summits, in autumn, when the insect is freshly emerged. Worn specimens may be found in the spring, and throughout the summer.

Vanessa Canace, L.—Rather uncommon; occasional specimens may be taken throughout the summer and autumn months. **V. cashmirensis*, Koll.—Abundant in the hills, and quite common at Pindi. Specimens vary somewhat in the depth of colouring. *V. xanthomelas*, W. V.—I have found this not uncommonly in early summer; generally in open sunlit spots in pine forests at 8000 ft. elevation. *V. calbum*, L.—Very common before the rains, and prefers the neighbourhood of hill streams, settling on flowers and bushes overhanging the water; a second brood appears in August in much smaller numbers. The depth of colouring varies greatly: the second brood is considerably darker and the colouring richer than the first.

Cyrestis Thyodamas, Bdv.—Common in the neighbourhood of Murree, and on the Kashmir road, 4000 ft.; it does not occur, so far as I am aware, in the Galis.

Kallima Inachis, Bdv.—Occurs at Murree and Abbottabad; this is probably its extreme western limit. The colouring is paler, and the specimens are rather larger than those from Burma.

**Libythea Lepita*, Moore.—Abundant before and during the rains, and prefers damp spots on the road sides and forest paths. It is a common garden insect at Pindi. There is an autumn brood.

Dodona Durga, Koll.—I found this locally abundant on dry rocks on the Abbottabad road. This year I have been unable to find a single specimen.

Lycæna Ariana, Moore.—Common on open hill sides throughout the Galis in June and July. *L. Medon*, Huf.—Not rare in the same localities as the last. I have not noticed an autumn brood. *Cyaniris Vardhana*.—Not at all rare in June, and then occurs sparingly throughout the summer; I have caught specimens as late as October. It has the same habits as the rest of the genus. *C. caelestina*, Koll.—The commonest blue in the hills, and found everywhere throughout the summer.

**Zizera Maha*, Koll.—Common everywhere, from Murree to Abbottabad, and as is so often the case the specimens taken in the rains are much darker than those taken earlier in the year. **Z. Gaika*, T.—This and *Z. Otis*, F., occur not uncommonly throughout the district.

(To be continued).

ANNOTATED LIST OF BRITISH TACHINIIDÆ.

BY R. H. MEADE.

(Continued from page 79).

27.—MACRONYCHIA, Rnd. = *Amorpha* Rnd.

Gen. ch.—Eyes nude, somewhat widely separated in both sexes; fronto-orbital bristles reaching to the roots of the antennæ, and partly in a double row in the male as well as in the female; antennæ with the second joint rather thickened and setose, the third joint not much longer than the second; arista bare; cheeks wide, and clothed with fine scattered hairs; facialia bare; vibrissæ with two long decussating bristles, placed some way above the epistome; abdomen ovoid, and somewhat flattened in the male, and elongated with a projecting horny oviduct in the female; the first segment is nearly as long as the others, and there are no discal setæ; wings with the fourth longitudinal vein bent at a sharp angle, and with a cubital appendix; legs having large tarsal claws and pulvilli in both sexes.

M. AGRESTIS, Flin. = *Donna* Rnd.

Colour yellowish-grey; forehead prominent; frontal stripe black, rather wider than the sides of the frontalia, which, like the cheeks, are white with black reflections; antennæ black; arista thickened to nearly the middle; palpi black; thorax with three wide stripes, the middle of which is trifid, and the outer ones maculiform; the outer dorso-central bristles are three in number behind the transverse groove; scutellum yellow-brown with a reddish tinge; abdomen grey, with three reddish-brown triangular spots on each segment, the bases of the triangles being backwards; legs black. This species, which is very variable in size, is rare; Mr. Dale has one in his collection.

T. cylindrica, Flin., has been recorded as a British species; I have not seen a specimen, and, from Zetterstedt's description, I do not think it will belong to this genus.

28.—MYOBIA, Dsv.

PYRROSIA, p. Rnd.

Gen. ch.—Eyes nude, frontalia somewhat narrowed in the male, and wide in the female: fronto-orbital bristles extending to about the middle of the second joint of the antennæ; cheeks bare; antennæ with second joint a little elongated, and the third at the most twice as long; arista pubescent, with the base thickened; facialia ciliated with a few hairs on their lower part; vibrissæ seated near the sides of the epistome close to the mouth; palpi long and thick; abdomen elliptical or conical, with the segments all of nearly equal lengths, the middle ones mostly without discal setæ; wings with the fourth longitudinal

vein bent at a blunt angle or in a curve; tarsi with the claws and pulvilli mostly small in both sexes. The four known British species are all more or less lutescent in colour, and very similar to each other, so that it is very difficult to discriminate them. Zetterstedt, in fact, considers *M. longipes* and *M. pacifica*, Mgn., only as varieties of *M. inanis*, Fln. They all belong to Rondani's sub-genus *Pyrrusia*; the middle abdominal segments being without discal setæ, and those on the margin of the last segment being arranged in a single series.

- | | | |
|-------|---|-----------------------------|
| 1 (2) | Fore femora with a black stripe on the upper surface... | 1. <i>fenestrata</i> , Mgn. |
| 2 (1) | Fore femora entirely yellow. | |
| 3 (4) | Hind femora as long as the abdomen | 2. <i>longipes</i> , Mgn. |
| 4 (3) | Hind femora shorter than the abdomen. | |
| 5 (6) | Abdomen in great part yellow | 3. <i>inanis</i> , Fln. |
| 6 (5) | Abdomen only yellow at the base | 4. <i>pacifica</i> , Mgn. |

M. FENESTRATA, Mgn.

Frontalia occupying about one-fourth of the width of the head in the male, and one-third in the female; frontal stripe narrower than the sides of the frontalia, and reddish-brown in colour; palpi yellow, sometimes with dark tips; antennæ with first and second joints testaceous, and the third black and twice the length of the second; thorax dark grey, with four rather narrow stripes, and with three outer dorso-central bristles behind the transverse groove; scutellum yellowish-grey; abdomen dark brown, with the sides of the first and second segments yellow and translucent, leaving a central dorsal dark stripe of moderate width, which widens as it goes backwards, spreading out and covering the whole of the third and fourth segments; anal segments in the male dark grey; no discal setæ on any of the segments, and the setæ round the lower margin of the fourth segment arranged in a single row; wings with the outer cross vein straight and upright, and placed about one-fifth nearer to the angle of the fourth longitudinal vein than to the inner cross vein; legs yellow, with the exception of the tarsi, which are black, and of the fore femora, which are more or less nigrescent upon their anterior surfaces. Very rare; have only seen one British specimen, which is in Miss Prescott-Decie's collection.

M. LONGIPES, Mgn.

I have not seen a specimen of this species, but it is recorded as British by Walker. It is described as having a very narrow frontal stripe; antennæ with the third joint not much longer than the second; thorax with indistinct stripes; abdomen with the dark dorsal stripe so narrow over the first abdominal ring that in the female the yellow sides coalesce and form a large oval patch; the legs are also longer than in the other species, the hind femora reaching to the end of the abdomen. Very rare.

M. INANIS, Fln.

This (the most common, and the typical species) closely resembles *M. fenestrata*, it is, however, usually rather larger, and altogether paler in colour; the frontal stripe is as wide as the sides of the frontalia, instead of being narrower; the thora-

cic stripes are finer, the scutellum yellow instead of greyish-yellow, the stripe on the back of the abdominal segments is rather narrower, and the yellow patches on the sides extend on to the third segment; the anal segment in the male is rufous or yellow instead of grey, the outer cross vein is rather nearer to the angle of the fourth longitudinal, being placed at about one-third of the distance between that and the inner cross vein, instead of two-fifths; the fore femora also are quite yellow. Not uncommon.

M. PACIFICA, Mgn.

This species differs from all the former ones by having the abdomen entirely grey, with the exception of a small yellow patch on each side of the first segment; the third joint of the antennæ is longer, it being between two and three times the length of the second; the palpi are thicker at the ends; the scutellum is grey; and the wings have the fourth longitudinal veins bent more at an angle. Rare; I captured one near Ulverstone, in Lancashire, in 1889; it is also in Miss Prescott-Decie's collection.

33.—LESKIA, Dsv.

MYOBIA, p. Mgn. and Mcq.

PYRROSIA, p. Rnd.

I have introduced this genus out of its numerical position in my analytical table owing to its close affinity to the preceding one, from which it scarcely differs, except by having the third of the antennæ a little longer. Meigen and Macquart both place the only species which it contains in *Myobia*, and Rondani includes it in his genus *Pyrrosia*. R. Desvoidy thus defines the genus: "Tous les caractères du Genre Myobie, le troisième article antennaire triple du deuxième qui est plus court, teintes jaune."* Though the characters of the two genera are, therefore, almost identical, still the species referred to *Leskia* is peculiar, and differs in appearance (being wholly yellow) as well as in habits from those in *Myobia*, the larvæ of the latter being parasitic upon *Hymenoptera* or *Coleoptera* (*Curculionidæ*), while those of the former are said to live in the bodies of the caterpillars of *Lepidoptera* (*Sesiæ*).

L. AUREA, Fln.

flavescens, Dsv.

Ochreous; head and face golden-yellow, with silvery glitter; frontal stripe narrow, and reddish-brown; antennæ dark yellow; palpi yellow, long and narrow in the male, and slightly thickened at the end in the female; thorax light brown, with golden-yellow pubescence, and very faintly striped; abdomen ochreous and translucent, the sides and hinder edges of the segments having silvery-white reflections; calyptra and halteres yellow; wings brownish-yellow; legs yellow, with brown tarsi. Very rare.

* Essai sur les Myodaires, p. 100.

29.—RÆSELIA, Dsv.

Gen. ch.—Eyes nude, and distant in both sexes; fronto-orbital bristles in a double row in both males and females, and descending to the roots of the antennæ; facial setæ ascending half-way up the face; antennæ with first and second joints short, and the third five or six times as long as the second; arista bare; abdomen oblong and convex, with the rings of nearly equal lengths, and with both discal and marginal setæ; wings mostly without the apical cross vein, and having the outer cross vein placed in the middle between the little (inner) cross vein to the point of flexure of the fourth longitudinal one. The sexes are very difficult to discriminate.

R. PALLIPES, Fln.

antiqua, Mgn.

Cinereous; forehead slightly prominent, frontalia wide, with a broad black or piceous stripe; antennæ with the first and second joints rufous or testaceous, and the third black, with the apex pointed in front; palpi rufous; thorax with four narrow lines, the outer ones small and broken; scutellum yellow at the apex; abdomen grey and immaculate, with the sides slightly rufous and diaphanous; legs yellow, with black arsi, fore femora sometimes nigrescent at the base. There is no doubt that *R. antiqua* is only a variety of *T. pallipes*, Fln., in which the apical cross veins are deficient; therefore, Fallén's name, which has the priority, must be adopted. Fallén remarks at the end of his description of *T. pallipes*: 'Var. β ♀ Monstrosa, nervo alarum quarto abbreviato;' this variety seems more common than the other, and I cannot make out that it is a sexual peculiarity, as Fallén's remark would lead one to suppose. This fly is not uncommon; Mr. Brunetti sent me two captured at the same time at Dulwich, in one of which the apical cross veins are present, and in the other absent; I have one or two specimens captured by myself, in which a small portion of this vein remains, while the rest is deficient.

30.—MEIGENIA, Dsv.

TACHINA, p. Mgn.

MASICERA, p. Mcq.

SPILOSIA, Rnd.

Gen. ch.—Eyes bare or pubescent, approximated in the males, and widely separated in the females; fronto-orbital bristles extending to about the apex of the second joint of the antennæ; facial setæ few; antennæ with the second joint somewhat elongated, and the third from two to four times as long as the second; arista bare, cheeks nude; vibrissæ placed at some distance above the upper margin of the mouth (epistome); abdomen conical, mostly spotted, and having both discal and marginal setæ; wings with the fourth longitudinal vein bent at an obtuse angle, and the outer cross vein placed rather nearer to the angle than to the inner cross vein.

- 1 (2) With two spots on the second abdominal segment.....1. *bisignata*, Wdm.
2 (1) With three spots on both the second and third abdominal segments...
2. *floralis*, Mgn.

B. BISIGNATA, Wdm.

Forehead and face prominent; frontal stripe black; antennæ grey, with the third joint three or four times the length of the second; palpi black in the male, sometimes pale in the female; thorax of the male black, with three stripes, the middle one broad and sometimes trifid; the female thorax is cinereous, and marked with four narrow stripes; three outer dorso-central bristles behind the transverse groove; abdomen grey, with two distinct, large, round spots on the second segment, in the male with a central dorsal black line, anal segments black and shining; in the female the abdomen is greyish-white, with the spots very indistinct, and placed more on the sides; scutellum black in male, cinereous in female; legs black. Not common; I captured both sexes near Maidstone, in Kent, in 1891.

M. FLORALIS, Mgn. non Fln.*

This little species (from 3 to 4 mm. in size) resembles the former in its general colour and markings on the thorax, but the design upon the abdomen is different, there being three spots instead of two on the second segment, and also upon the third; they often coalesce, and the middle spots seem formed by a dilatation of part of the central stripe opposite the middle of the segments, the spot so formed being sometimes on a higher level than the others; the third joint of the antennæ is rather shorter in proportion than in *M. bisignata*, and the abdominal spots are much more distinct in the female. Rare; I captured a single male near York in 1889.

(To be continued). 126

NOTES ON COLLECTING *TORTRICES* (THE POLE SYSTEM).

BY CHARLES FENN, F.E.S.

There is one thing which I have little doubt has struck most Lepidopterists who have travelled at all, and that is, the difference in the tactics pursued by the collectors of widely removed localities, even when in search of the same insect. I used to be especially amused at some of the fashions in nets, both as regards shape and size, and I have even known the colour of the gauze or leno to be peculiar to certain places, although it can hardly be classed as a local variation. I dare say my own net was equally a subject of comment, from its large size, but I am convinced that the larger a net can be worked, up to a certain size, the greater will be the success attendant on its use. We might all of us be of some service to each other if we were to compare notes a little more; but there is something closely allied to secretiveness (to put it as mildly as possible) among a certain class of collectors which it is almost impossible to overcome.

* *T. floralis*, Fln., belongs to the genus *Nemorilla*.

My object in writing these notes is to call attention to a method of catching *Tortrices* not very generally practised, and which is not only an easy mode of working, but most productive in results. I allude to collecting by the *pole* system. The apparatus required is simple in the extreme. Three bamboos, each a little more than five feet long, and two of them with brass or copper tubes fixed to one end like the joints of a fishing rod, to enable them to be jointed together, and a big balloon net as light as possible, the ring of cane, and fitting into a brass squared Y, are the only requisites. The net should be *about* two feet in diameter and three feet deep, and nearly circular. It is not an expensive affair, and when the net is required to be used in its ordinary capacity, the topmost bamboo will serve as a handle, while the others strapped together make a good beating stick.

Let me describe the *modus operandi*, and for this purpose we will select a warm sunny afternoon at the very end of May, or in the first week in June, and betake ourselves to one of the woods in the south of London, say the S. E. district, for example. Having chosen a spot on the outskirts of the wood on the leeward side, and where the trees are not too high, we joint our bamboos together, fix the net to the top joint, and await the result.

Shaded by the foliage we look up to the bright blue sky, across which the fleecy cirrus clouds are gently drifting. There is a slight breeze, which lightly stirs the higher leaves, and as we gaze upwards the effect is entrancing, for the immensity of space spread above us is even more vividly realized than by the spectacle of myriads of stars on some clear moonless night. But to return to earth. Around the tips of the oak boughs at their greatest altitude hover and dance numbers of insects of various Orders — *Lepidoptera*, *Diptera*, *Hymenoptera*, &c., and conspicuous amongst them plenty of the lovely little *Adela viridella* gently buzzing, and occasionally soaring some distance on apparently motionless wing. But suddenly out of the very sky apparently, for we are unable to detect whence it comes, appears a tiny dark insect flying in *wild and jerky fashion above the topmost twigs*. Now is the time to be on the alert. Gently but firmly grasping the pole, which is raised near the level of the insect, one stroke and our little friend is entrapped, a turn is given to the net so that the bag hangs over the rim; it is rapidly lowered, and we espy our quarry fluttering up the side. It is easily boxed, a fine *Anchylopera upupana*, and a good commencement. But while we have been boxing one, others have been passing over, and there is no time to waste. Among them will be found, sometimes in great numbers, the lively little *Stig-*

monota puncticostana; we recognise it as darker and smaller on the wing and more level in its flight. What are those larger insects dashing over at intervals? Catch one, and you will see; they are not so big as they appear, and are *Cnephasia musculana*, often rather a nuisance from their abundance. Those little fellows like flies are *Stigmonota redimitana*, while, if hawthorns be near, an occasional *Pyrodes Rhediana* will join in the dance; the latter does not, however, wander far from its food-plant.

Occasionally, for it is a local insect, *Semasia obscurana* (*gallicolana*) will be met with in similar places among oaks, and on one occasion I took over 70 in this way in a little over an hour without moving from one spot. As the afternoon wanes the species already named fly less freely, but they are joined by *Anchylopera Mitterbacheriana* and *Grapholitha campoliliana* abundantly, the latter among salallows especially, while *Phlæodes tetraquetana* in swarms, and *P. immundana*, sometimes commonly, appear upon the scene. Big *Tortrix ministrana* fly heavily over at intervals, and other species turn up, such as *Lobesia Servillana*, *Penthina picana*, *Argyrotoza Conwayana*, &c., &c., and this is continued until nearly dusk, when it ceases to be profitable.

Although it is evident that tree-feeding *Tortrices* are principally those captured in this way, we meet with others among them which we should hardly have expected to find flying so high. I have captured such insects as *Simaethis Fabriciana*, *scintillulana*, *Halonota nigricostana*, and *Lobesia reliquana*, but only the last in any numbers.

A list of those species which may be taken flying over the tops of trees and bushes and round the tips of the higher branches is here appended, and as most of them fly out of reach of an ordinary net, the value of the pole net cannot be over estimated.

I suppose every one knows that a very large percentage of our *Tortrices* are true lovers of sunshine, flying rarely when the luminary is obscured; in fact, there are very few families which are purely crepuscular or nocturnal in their flight, and many fly both by day and night. Genera like *Sericoris*, *Mixodia*, *Eriopsela*, *Phoxopteryx*, *Halonota*, *Grapholitha*, *Semasia*, *Coccyx*, *Stigmonota*, *Dichrorampha*, *Chrosis*, and *Aphelia*, are almost exclusively day flyers, and many others fly early in the evening between sundown and dusk, so that there is plenty of work from April to September.

Very little is really known of our southern *Tortrices*, and I am certain that several new species would turn up, and doubtless some of them in considerable numbers, if the country were systematically worked in the manner indicated. I have been often surprised at

finding insects in the south, not uncommonly, whose range I had supposed to be chiefly northern, and I may cite *Pædisca Bouchardana*, = *rubiginosana*, not at all a scarce insect in the south, as an example. Times of flight are, in this connection, the chief point for consideration in working, but, as a general rule, from 1 p.m. until an hour before dusk, or even a little later, is the time that is most prolific in results.

The following are my experiences of the times of flight of high-flying *Tortrices*:—

TORTRICES.

Tortrix Podana, *rosana*, *ribeana*, and *heparana*: from just before dusk till after dark over high bushes, fruit trees, and among the lower branches (high up) of forest trees.—*T. piceana*: very high and heavily over pine trees at dusk.—*T. xylosteana*: sundown to dusk over trees and bushes in woods, rapidly.—*T. diversana*: over the tops of small birches at dusk; flight similar to *ribeana*; I have never taken it among elms.—*T. sorbiana* and *viridana*: swarm over oaks, especially pollards, from an hour after sundown to dark; *sorbiana* also flies wildly on wood paths.—*T. ministrana*: from before sunset till nearly dusk, over bushes and tree tops.—*T. Forsterana*: in plenty over the tops of high ivy-covered walls at dusk.

Argyrotoza Conwayana: although generally flying among privet bushes in the sunshine, has a second flight, just before dusk, high over the tops of the trees.

Ptycholoma Lecheana: swarms over tree-tops and bushes from noon till dusk.

Titula semifasciana and *Penthina capræana*: over the tops of willows after dusk.

Hedya laricana: over the tops of young larches at dusk.—*H. dealbana*: round the tips of the higher branches of various trees, especially oaks, at sundown, very abundantly.—*H. aceriana* and *neglectana*: ditto, poplars.—*H. Servillana*: late afternoon and at sundown among willows, flies very high.

Orthotænia Branderiana: flies very wildly at dusk over high aspens, trees and bushes.

Cnephasia musculana: from about 4 p.m. to dusk, very high over various trees, abundant.

Capua favillaceana: in the late afternoon and at dusk over high bushes of hornbeam and oak, and around the high branches of oaks in bright sunshine.

Anchylopera Mitterbacheriana: among oaks and birches from about 6 to 8 p.m., sometimes earlier, flies high.—*A. upupana*: 2 p.m. until 8 p.m., rapidly and very high among oaks and birches.—*A. lactana*: abundantly at dusk over the aspen tops.

Grapholitha Paykulliana: at dusk over the tops of birches.—*G. nisella*: sundown to dusk; flies rapidly over willows, poplars and aspens.—*G. subocellana*, = *campoliliana*: in swarms over the tops of tall willows from sundown to dusk.—*G. minutana*: in the sunshine about sunset, over the tops of aspens and balsam poplars.—*G. Penkleriana*: at dusk over the tops of hazels, alders, willows, &c., and around the lower branches of the large alders.—*G. obtusana*: among oaks,

flying over the tops in the afternoon sunshine.—*G. tetraquetana*: swarms among birches, flying rather high, from noon until dusk.—*G. immundana*: a little before dusk till dark, over the tops of alders and birches.

Hypermercia augustana: plentifully over sallow tops at dusk.

Batodes angustiorana: in thousands round the higher branches of yew trees, etc., in the bright sunshine.

Pædisca bilunana: often swarming among birches, but flying late.

I may here remark that many species are rather difficult to see when flying at dusk, especially if their under-wings be inconspicuous or dark, but by taking up a position so as to face the afterglow, many specimens may be easily captured as they successively appear as dark spots against the pale sky.

P. Ratzeburgiana: at sundown till dusk round the tops of spruce firs.—*P. rubiginosana*, = *Bouchardana*: afternoon till sunset, round the tops of the boughs of Scotch firs (trees).—*P. corticana*: in incredible numbers round tops of the lower branches of oak trees at dusk.—*P. profundana*: flies wildly at sundown along high hedges and woodsides.—*P. ophthalmicana*: sits on the trunks or hides among the leaves of the lower parts of poplars in the daytime; flies around the tops of the branches at dusk.—*P. occultana*: swarms among larches, from which it is easily disturbed by day, but flies over the tops of the young trees at dusk.—*P. Solandriana*: over the tops of birch and other bushes in abundance at dusk.—*P. semifuscana*: flies high among sallows after dusk.

Halonota tetragonana: flies high among rose bushes in the bright sunshine; almost impossible to see (like *ulmana*) unless the sky or a white road forms a background to the insect.

Semasia obscurana, *Coccyx splendidulana*, and *argyrana*: from 4 p.m. till 7 p.m., very high round the tops of the oak branches.—*S. spiniana*: over the tops of hawthorn hedges in the bright afternoon sunshine (but this is best obtained by beating).—*S. janthinana* and *Pyrodes Rhediana*: fly in the afternoon sun over the hawthorn tops.

Coccyx cosmophorana, *subsequana*, *pygmæana*, and *Ochsenheimeriana*: in the hot sun round the pine tops in the middle of the day.—*C. hyrciniana* and *nanana*: among spruces, flying round the tips of twigs in the afternoon sunshine.

Retinia Buoliana, *pinicolana*, and *pinivorana*: at dusk over the tops of the high fir branches and taller bushes.—*R. Turionana*: at dusk; prefers the smaller bushes, and does not fly high.—*R. duplana*: said to fly round the fir tips in the hot sunshine, like *pygmæana*, &c.—*R. posticana*: ditto.

Carpocapsa grossana: swarms among beeches, flying high, from 6 p.m. till dusk.—*C. pomonella*: from 7.30 p.m. till dark, over the tops of apple trees; flies very rapidly.

Endopisa nigricana: over the tops of hedges bordering pea fields; flying in the hottest sunshine.

Stigmonota coniferana: flying high in the afternoon round the tops of the Scotch firs.—*S. redimitana*: among oaks, flying very high, often in swarms, noon till sunset.—*S. Weirana*: ditto, among beeches.—*S. roseticolana*: flies high in

the afternoon over roses in hedges and woods.—*S. Germarana*, = *puncticostana* : noon till 8 p.m., flies very high.—*S. ravulana* : over the tops of birches in the afternoon sun.

Catoptria Albersana : rides in woods among honeysuckle ; flies high and rapidly in the afternoon sunshine.—*C. Mylleriana* : occasionally taken flying high over bushes and trees.

Simaëthis Fabriciana, = *oxyacanthella* : ditto.

Lobesia reliquana : flies high among oaks (on which it does *not* feed) in the bright sunshine.

I have purposely omitted all reference to very many well known day flying insects, of which the genera *Eupæcilia*, *Chrosis*, *Argyrolepiæ*, *Catoptria*, *Stigmonota*, &c., &c., are examples, for the simple reason that these notes being written merely to show what can be done under the pole system, any notice of low flying species would be inadmissible. Although *Tortrices* are more frequently captured in this way than insects belonging to other groups, yet many *Geometræ*, *Noctuæ*, and *Tineæ*, especially the last, may be captured. In fact, given a spot where *Lepidoptera* are abundant, there is no certainty what may turn up, and, in addition to the gain to the mere collector, the opportunity to any one desirous of investigating the modes of flight of even allied species, is of the greatest value.

Our study does not end at the mere determination of species. A wider field is open to us in observing and recording their habits and life-histories, and until this is done thoroughly—and it is within the power of every one to assist—we can only feel that we possess the dry skeleton of our science.

Eversden House, Burnt Ash Hill, Lee :

February, 1892.

ON SOME NEW SPECIES OF *HISTERIDÆ*, AND ONE NEW GENUS.

BY G. LEWIS, F.L.S.

EBLISIA CAVIPYGA, *sp. n.*

Oblongo-ovalis, *subdepressa*, *nigra*, *nitida*, *minutissime punctulata* ; *pronoto stria interna valida*, *interstitiis latis* ; *elytris*, *5-striatis*, *striis 4—5 abbreviatis* ; *pedibus rufo-piceis*. *Long.*, $3\frac{1}{2}$ mm.

Oblong-oval, rather depressed, black, shining ; the forehead nearly even, with a slight transverse depression behind the stria, stria complete, slightly bent anteriorly ; the thorax, marginal stria extremely fine, internal strong at the sides, leaving a wide interstice like that of *Platysoma striatiderum*, Mars., finer behind the head, and markedly inflexed at the posterior angle ; the elytra, striae, 1—3 complete and

strong, the second and third turning towards each other at the base, interstice of first and second widest anteriorly, fourth apical, short, fifth apical and one-third longer, straight, reaching the middle of the dorsum, sutural interstice wider than the others, apical margin microscopically strigose; the propygidium, transversely punctate, median punctures oblong; the pygidium with a large, deep, nearly circular fovea on either side, median area distinctly convex, forming a little boss; the prosternum without striæ, microscopically strigose, anterior lobe irregularly punctulate, punctures of various size and much scattered; the mesosternum anteriorly widely sinuous, bistriate at the sides, inner stria complete in front, both striæ continued along the sides of the metasternum; first segment of the abdomen also laterally bistriate; all the sternal plates are punctulate, but the punctures are extremely fine, scattered and evenly set. The anterior angles of the mesosternum are minutely strigose; the legs are pitchy-red, anterior tarsal grooves nearly straight (generic character), tarsi, especially the intermediate and posterior pairs, short and robust, anterior tibiæ 5—6 dentate.

E. monticola, Lew., is a species similar to the above.

Hab.: Burmah, Ruby Mines (*Doherty*).

PLATYLISTER, *n. g.* (Type *Platysoma ovatum*, Er.).

Gen. *Platysomæ approxime affine sed multo major. Corpus depressum, ovatum vel oblongo-ovatum; mandibulis validibus, fortibus dentatis; frons concava; prosternum haud striatum; mesosternum antice emarginatum vel sinuatum; pygidium margine extus elevata; tibiæ anticæ fortiter dentatæ, fossa tarsali conspicue sinuata.*

The type of the genus *Platysoma* is *P. depressum* of authors, and I propose to separate from it the large species which are found in considerable numbers in Eastern Asia and the Islands lying to the west of the Pacific Ocean, under the name of *Platylister*. With rare exceptions the species of *Platylister* have the mesosternal marginal stria complete. The genus *Platysoma* as it has stood until now contained nearly 150 species; Harold, in 1868, gave 82, of which at least 10 names are lost in synonymy, so that since the issue of the Munich catalogue the number of species has been doubled, and now nearly 50 of these will come into the new genus. Many species of *Platysoma* have a convex immarginate pygidium, and are very differently constructed insects to *Platysoma ovatum*, Er., *P. odiosum*, Mars., and others; and I think it will greatly facilitate the study of this somewhat obscure group to divide it as I have determined.

PLATYSOMA STRIATISTERNUM, *sp. n.*

Ovatum, parum convexum, nigrum nitidum, punctulatum; fronte leviter impressa, stria utrinque interrupta; elytris, striis 1—3 integris, 4—5 abbreviatis; pygidio utrinque transversim excavato.

Long., $3\frac{3}{4}$ mm.

Oval, little convex above, black, shining, sparsely and very finely punctulate above and beneath; the forehead, feebly impressed in the middle, lateral stria incurved at the angle before the eye, interrupted on either side, anteriorly bent; the thorax, lateral stria well marked, interstice narrow and even in width throughout, stria continued behind the head; the elytra, dorsal striæ 1—3 complete, but the second is a trifle shorter than the first and third, 4—5 apical, the fifth occupying one-third of the elytra, the fourth a little longer, the interstice between the fifth and suture is wider than that between the fourth and fifth striæ, epipleura bistriate; the propygidium, transversely punctured; the pygidium, transversely excavated on either side at the base, the excavation being surrounded by a triangular depression, central area is a little coarsely, but not quite densely, punctured, apical margin narrowly smooth but not raised; the prosternum, anterior lobe punctulate, keel with well marked lateral striæ, striæ straight before the coxæ, widening out between them, not joining at either end; the mesosternum, feebly sinuous anteriorly, stria complete and continuing down the metasternum; anterior tibiæ 5—6 denticulate.

The prosternal striæ in this species resemble those of *P. striatipectus*, Mars.; but in its general facies and elytral striation *P. striatisternum* is similar to *P. frontosum*, Mars.

Hab. : S. E. Borneo, Martapura (*Doherty*).

HISTER ROBUSTICOLLIS, *sp. n.*

Breviter ovatus, convexus, niger nitidus; *H. amplicolli simillimus sed thorace margine ciliato et prosterno fortiter carinato. Elytris 3-striatis.*

Length, 9 mm.

Short-oval, convex, black, shining; the forehead, punctulate, stria complete, straight anteriorly, a feeble median depression behind the stria; the thorax, ciliate at the sides and front, finely punctulate, external stria abbreviated before the posterior angle, internal feebly sinuous, inflexed before the base, and continuing round the anterior angle to a point just beyond the level of the eye; interstice somewhat similar to that of *H. amplicollis*, Er.; the elytra, punctulate like the thorax, 1 stria is complete and fairly well marked, 2 and 3 also complete but very fine; the propygidium, a little sparsely covered with moderately long punctures; the pygidium, punctures rather larger and a little more thickly set; the prosternum, a little prominent and carinate before the coxæ, the outline viewed sideways is arched, or almost semicircular in outline, between the coxæ the sternum is cone-shaped, with short lateral striæ, which meet at the vertex in a sharp point; the mesosternum, clearly emarginate, the marginal stria complete; the anterior tibiæ tridentate, the apical tooth being very robust.

In structure this species is very similar to the well-known European species, *H. grandicollis*, Ill., and *amplicollis*, Er. In the prosternal keel it is most like the first, but in the elytral striæ it agrees better with the second.

Hab. : Natal.

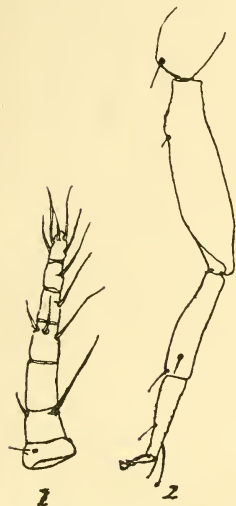
Folkestone : *February 29th, 1892.*

NOTES ON SOME BRITISH AND EXOTIC COCCIDÆ (No. 22).

BY J. W. DOUGLAS, F.E.S.

LECANIUM RUBI.

Coccus rubi, Schrank, Fauna Boica, Bd., ii, i, p. 144, No. 1260; Sign., Ess. Cochen., p. 462.



♀ adult. Scale broad rounded-oval, very convex; in some cases considerably produced on the margin in front, and having also a furrow extending thence at one side of the median line towards the disc; but in the majority of cases the form is almost circular and hemispheric; always smooth and shining. The colour is red-brown, darker, almost blackish at the sides, the anal area light brown, as also are the up-turned sides of the anal cleft. The surface is covered with very small pale dots; under the microscope these appear as oval, clear, cellular spaces in series, forming a fine tessellation. There are also large, conspicuous, clear white markings, namely, on the first third a band, widest at the extremities, extends quite across from side to side; joined or close to this, posteriorly, a band of connected blotches lies on the sides, not far from the margin, but does not reach the apex; down the centre a series (4—5) of broad, connected blotches, with long, laterally divergent

dentations, which decrease in succession, extends almost to the anal cleft; and anterior to the thoracic band are usually some small, irregularly shaped blotches. The width of the markings varies in different scales, and occasionally the points of the dorsal dentation are turned towards and meet each other, so that a dark space is enclosed between each two of them. This is the nuptial adornment, lasting until the oviposition is completed (at about the end of June); the white markings then disappear, the colour becomes uniform nut-brown, and the form quite or more than hemispheric. In the early stages the scales are also hemispheric; the colour clear red-brown, without markings, but the pale dots are very evident. Antennæ (fig. 1) short, stout, of seven joints consecutively narrower; the 1st very short; 2nd nearly twice as long; 3rd three times as long; 4th two and a half times as long; 5th and 6th each about as long as the 2nd; 7th nearly the same, gradate; one hair on the 1st; two on the 2nd, one of them very long and strong; none on the 3rd; three on the 4th; one on the 5th and 6th; and several on the 7th. Legs (fig. 2) very long and strong; tibiæ about one-fourth longer than the tarsi; digitules ordinary. Length, 5 mm., breadth, 4 mm.; or otherwise nearly circular.

♂ scale white, nearly smooth, the dorsal ring very slight. The imago dark chestnut-brown, the wings greyish-white, with the costal stripe faint carmine. A very ordinary form.

Schrank, in his "Fauna Boica," *l. c.*, describes a *Coccid* thus:—

"Brombeeren Schildlaus,—*C. rubi*. Wohnort: auf dem Brombeerenstranche. Das ausgewachsene Weibchen nussbraun, gross, mehr als halb kugelförmig. Eyerzeit: Junius."

Signoret, *l. c.*, merely quotes the above, and adds "Inconnu," but in describing a *Lecanium* on bramble, sent from the United States by Mr. A. Fitch under the name of *L. rubi*, he says that it is the smallest species known to him, and as it does not appear to be the same as Schrank's species, he changed the name to *L. Fitchii*. But as our newly acquired species in its ultimate state agrees well with Schrank's imperfect description, which certainly indicates a *Lecanium*, and, as no other *Lecanium* is known to live on *Rubus* in Europe, I do not think I err in the identification. In the structure of the antennæ and legs it is very distinct.

On May 30th, I received from Dr. T. A. Chapman some ♂ and ♀ scales of this species on bramble-stems (*Rubus*) of last year's growth, obtained about ten miles from Hereford, and as most of the females were immature, and Dr. J. H. Wood, of Ledbury, had assiduously hunted for more without success, I thought I would try to find some in this neighbourhood; so, on the 10th June, I went to a sheltered place where brambles grow in a hawthorn hedge. "The eye sees what it expects to see"—sometimes; and though I hardly expected, I yet hoped to see some scales of *L. rubi*. But it is no easy matter to see far into a bramble bush, which is a fortress with natural *chevaux de frise*, and in this instance was further fortified with the defensive armour of the hedge-thorns, and an outlying stockade of stinging nettles. My attention was first arrested by a troop of black ants (*Formica fuliginosa*) doing sentry duty up and down one of the few remaining stems of last year's growth, and judging by previous observation in other species that they were guarding a *Lecanium*, I determined to storm the fortification at all hazards. I was rewarded for the damage to my hands, for, on the under-side of the stem, at the place involuntarily indicated by the ants, I obtained a full grown ♀ *Lecanium rubi*. Thus encouraged, I made further assaults, always under the guidance of ants, and succeeded in finding six or seven more of the ♀ scales, and two empty scales of the ♂. But they were all on one bush, and I could not get another scale, though I hunted near and far on other bushes; so it seems that the species is at least localized, and this, and the difficulty of getting it out of its habitat, may be the sufficient reason why it has not been seen since it was described by Schrank in 1801. Truly, it is a protected race.

The pattern of the white markings on the ♀ scales is the same as on *Lecanium distinguendum* and *L. fuscum*; this season I have also seen it, but in a fainter white colour, on *L. pyri* and *L. genevense*, so that its occurrence at a certain age of the scales may prevail in many species, as I have surmised at p. 96, vol. ii, n. s.

With his usual kindness, Mr. R. Newstead has mounted and drawn to the same scale both the antennæ and legs.

153, Lewisham Road, S.E.:

July, 1891.

ON AN INDIAN ANT-MIMICKING HEMIPTERON.

BY E. BERGROTH, M.D.

At the meeting of the Entomological Society of London, of July 1st, 1891, Rev. Canon Fowler exhibited specimens of a bug living with and imitating an Indian ant, *Polyrrhachis spiniger*, Mayr. Mr. R. C. Wroughton, of Poona, having sent me specimens of this bug, I find that it belongs to the family *Coreidæ*, sub-family *Alydinæ*, division *Micelytraria*, genus *Dulichius*, Stål, a genus hitherto known only from South Africa. The species being new, I describe it here. It has, indeed, a most striking resemblance to the *Polyrrhachis*, of which Prof. Forel had the kindness to send me a specimen. Mr. Wroughton has only found the brachypterous form. If the species has a macropterous form, it is probable that this form has no or little resemblance to an ant.

No nearer particulars on the habits of the bug are known, but I think it is a foe to the ant. It can attack the ant without great risk, having an excessively strong chitinous harness.

DULICHIVS WROUGHTONI, n. sp.

Forma brachyptera:—Niger, nitidus, dense punctatus, antennis (articulo primo excepto) picinis, coris apice albescente, articulis duobus primis tarsorum obscure testaceis. Spinæ laterales pronoti fissæ. Spina scutellaris suberecta, spinis thoracis longior. Corium scutello fere duplo longius, fortiter seriatim punctatum, apice oblique truncatum, membrana nulla. Abdomen leviter subænescens, subalutaceum, late subovale, basin et apicem versus subæqualiter angustatum, subtus valde convexum, supra bullato-fornicatum, connexivo deplanato. Articulus primus tarsorum posticorum articulis duobus ultimis unitis paullo plus quam dimidio longior.

Long., 8 mm.

India orientalis: Poona et Nilgherries, D. Wroughton; Calcutta et Barrackpore, D. Rothney.

Easily distinguished from *D. trispinosus*, Stål, the only species hitherto known, by the black colour, the bifid thoracic spines, and the less elongated first joint of the hind tarsi. *D. trispinosus* is a yellow species, of which only the macropterous form is known.

Tammerfors, Finland:

March 1st, 1892.

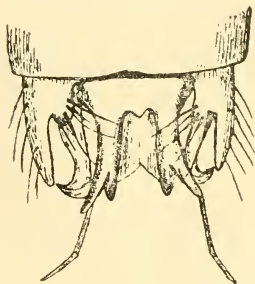
HYDROPTILA MACLACHLANI, KLAPÁLEK, A CADDIS FLY NEW TO BRITAIN.

BY KENNETH J. MORTON.

This species, recently described by Klapálek,* has been standing in my collection many years without a name. It is by no means uncommon at one small stream, at least, in our neighbourhood, and it has probably a wide distribution in the country.

The important characters are, as usual, found in the genitalia and accessory appendages of the ♂, which differ much from those of any other known European form, but on account of the dense clothing of hairs which surrounds them, they are, as a rule, rather difficult of examination.

Viewing the abdomen from the side, the appendages are ordinarily much concealed by the obtusely produced lateral parts of the last segment, but there are visible a superior plate with upturned outer margin, and, beneath the plate, the large penis usually much exerted, dilated inwardly, and accompanied by two divergent, long, spiniform stimuli, slightly upturned at the tips. Towards the ventral surface the lateral projecting edges of the last segment terminate in a wart-like space, with a few spinulose hairs. Viewed from beneath the inferior appendages are seen to be united, with a small angular projection between their dilated bases; the shaft of these appendages is long and straight, the apex furcate, the lower and outer branch being the longer. The other inner parts are obscure and difficult to define; drawings made by me differ somewhat from Klapálek's figure, but there is no reason to doubt the identity of the British insect with his.



Carlisle, N. B. : *March*, 1892.

NOTE ON *PENTARIA BADIA*, ROSENH. (= *SERICARIA*, MULS.),
WITH DESCRIPTION OF A SECOND SPECIES FROM THE
PYRÉNÉES-ORIENTALES.

BY G. C. CHAMPION, F.Z.S.

Amongst a large number of *Coleoptera* collected by myself during an entomological excursion to Millas, on the River Tet, about midway between Perpignan and Prades, made in company with M. René Oberthür and Dr. Sharp, on June 29th last, I find two species of the genus *Pentaria*. One of these, of which I obtained both ♂ and ♀, is referable to *P. badia*, Rosenh. (= *sericaria*, Muls.), a rare species of the warmer parts of Europe (Meridional France, Spain, Portugal, &c.) ;

* Sitz. Böhm. Ges., 1890.

the other is more nearly allied to *P. dimidiata*, Mars. (L'Abeille, xiv, p. 27), from Lebanon, and is described below under the name of *P. Oberthüri*. *P. badia* (*sericaria*) is recorded by Jacquelin-Duval from the] Pyrénées-orientales (Gen. Col., iii, p. 409), and is figured by him (*op. cit.*, t. 91, fig. 452) under the name of *P. sericea*. *Pentaria* has hitherto contained but a single European (and Algerian) species; in the Southern United States, Mexico, and Guatemala it almost replaces *Anaspis*. The bilobed penultimate joint of the anterior tarsi separates it easily from the other genera of the Anaspides, the American *Diclidia* excepted; in *Cyrtanaspis*, *Anaspis* (including the various subgenera formed at its expense), and *Naucles*, this joint is quite small and the third is bilobed. *Pentaria* also has the hind tibiae longer and more slender than in *Anaspis* and its allies. It is probable that other European species will yet be discovered.

PENTARIA OBERTHÜRI, *n. sp.*

Testaceous, very finely sericeous-pubescent; the elytra with a rather broad post-median fascia, the apex and suture piceous, the base slightly infusate; the eyes black; the legs, antennæ and palpi entirely testaceous; beneath testaceous, the venter and middle of the breast infusate. Antennæ moderately long, joints 3—6 slender, 3 and 4 about twice as long as broad, 5 and 6 a little shorter, 7—11 thickened, 7 and 8 subequal, longer and stouter than 6, 9 and 10 as broad as long, 11 ovate and nearly twice as long as 10; prothorax much broader than long, the sides rounded and converging in front, straight behind, the hind angles rectangular; elytra moderately convex, subparallel in their basal half, gradually narrowing beyond; anterior tarsi long and slender, the 4th joint bilobed, and as wide as the 3rd; hind tibiae slender, longer than the two basal joints of the hind tarsi united.

Var.—The elytra testaceous.

Length, $2\frac{3}{4}$ mm.

Hab.: Millas, Pyrénées-orientales.

Two examples, one of the type and one of the variety, probably both females. Easily separable from *P. badia* by the much more slender, entirely testaceous antennæ: in *P. badia* joints 6—11 are infusate and stout, 8—10 strongly transverse; in *P. Oberthüri* the sixth joint is not stouter than the fifth, and joints 7—11 only are moderately thickened, 9 and 10 being as long as broad. In the typical form of *P. Oberthüri* the markings partly enclose two spots of the ground colour on each elytron, one, very large and oblong, extending from the humerus to the middle, the other, much smaller, a little before the apex. In its elytral markings *P. Oberthüri* resembles the Guatemalan *P. quadriguttata*, Champ.; but the latter has the posterior spot more distant from the apex.

11, Caldervale Road, Clapham, S.W.:

February 6th, 1892.

Limnophilus decipiens, Kol., in Ireland.—About the end of August, 1890, I caught a small number of this not very common insect at two lakes near Glaslough, in Co. Monaghan. The species appeared to be just coming out, and it is thus probably of somewhat autumnal habit.—KENNETH J. MORTON, Carluke, N. B.: February, 1892.

Notes on Ctenopseustis obliquana, Wlk.—In Vol. i, second ser., p. 217, of this Magazine, Mr. C. G. Barrett contributed some notes on the destructive habits of this species in New Zealand. When Mr. Barrett's notes were written, its attacks were limited to the flesh of ripe apricots. Last year, however, I detected the larvæ attacking ripe plums, but not to the extent it destroyed apricots. Considering that the species has only attacked the latter for two seasons, it certainly assumed very serious proportions last year. In my own garden I was able, last season, to study the habits of the larvæ in all stages of development. The eggs are laid in November on the young shoots or in the axils of the young leaves, and hatch in 12 to 15 days; in a few days the young larvæ are able to move along the shoots, and commence eating the edges of the young leaves; in a fortnight or so they are able to draw the two edges of the incurved leaves together, in which they remain concealed during the day. By the time the fruit begins to colour and ripen, some are half and others two-thirds grown; they then attack the flesh in the depression around the fruit-stem, and bore into the pulp. In many instances the fruit-stem is injured in a manner to deprive the fruit of proper nourishment, thus causing it to shrivel or ripen prematurely, and drop from the tree. With a little experience it is easy to detect the fruit containing larvæ, as they soon become paler, even when they do not fall off. Last season I collected a number of ripe fruit with the full-fed larvæ pupating within them. These I kept on dry sand in a glass jar until they rotted, and became covered with a growth of blue mould; the latter, however, did not injure the pupæ, as they all emerged perfectly. The moth has been very common this spring, and the young larvæ are numerous at the present time on the foliage of the trees. Growers of this excellent and easy grown fruit are likely to have a lively time of it, as well as be at great loss, unless some stringent measures are adopted for its immediate suppression.—W. W. SMITH, Ashburton, N. Z.: January 5th, 1892.

Note on Eristalis tenax in New Zealand.—This fine mimicking Dipteron is not quite so numerous in this district this season as it was at this time last year. I think it may in some measure be due to the greater rainfall of last winter, in flushing the stagnant and swampy pools where the larvæ chiefly exist. I was lately at a wool-scouring works half a mile from Ashburton, and observed the larvæ in hundreds swimming about in the fat barrels. Some of the latter had remained where they stood for years, and were filled with a thick, black, strong smelling liquid; the larvæ, however, appeared to thrive well in the atrocious stuff.—ID.

Rare Diptera in 1891.—Amongst my captures in Sutton Park last year were *Tipula Diana*, Mg., not uncommon in a small damp spot about 30 yards square; *Cordylura ciliata*, Mg., ♂ & ♀; *Glaphyroptera Winthemii*, Mg., one specimen; *Clinocera bistigma*, Curt., common, but difficult to capture, owing to their resting

under the arches at the overflow of pools. Mr. Verrall kindly identified them for me, and the first three are placed in italics in his list.—R. C. BRADLEY, Sutton Coldfield: *March*, 1892.

Note on a doubtful British Philhydrus.—In the Entomologist's Monthly Magazine, vol. ix, December, 1872, I described as a new species, under the name of *Philhydrus suturalis*, a *Philhydrus* that was at that time confounded in our collections with *P. marginellus*, and I also diagnosed a variety thereof. The species was said afterwards by Bedel to be the same as *P. coarctatus*, Gredler, a species described in a local list in an irreconisable manner. Although I have never seen any evidence produced to show that Gredler's description was really drawn from *P. suturalis*, I have not thought it worth while to discuss the matter, for so long as the species was recognised it appeared to be a matter of little importance whether it were called *coarctatus* or *suturalis*.

The matter has now assumed a somewhat different form, owing to Kuwert, in the Bestimmungsstabelle of European *Coleoptera*, stating that the form I gave as a variety of *P. suturalis* is really another species, and applying the name of *suturalis*, Sharp, to the species (? form) I called a variety, and the name *coarctatus*, Gredler, to the species I called *suturalis*. This line is adopted also in the last edition of the "Catalogus Coleopterorum Europæ," where *suturalis*, Shp., and *coarctatus*, Gredl., are given as distinct species, and are both mentioned as British insects. Thus, as the matter stands at present, the European Catalogue credits us with possessing in Britain a species more than our own lists recognise.

I have given away at different times "types" of *P. suturalis*, so that I have now only a very small number of examples, and I am quite unable to express any decided opinion as to whether *P. suturalis*, Shp., and *P. suturalis*, Shp., var., are distinct species or not, but there can be no harm in my saying that I doubt it.

Should it be settled that they are, the synonymical question will then arise as to what are to be the proper names of the two.

As regards the spelling of the generic name, it may be worth while to recall that Solier, its author, spelt it *Philhydrus*; this was altered by some of those who considered themselves authoritatively acquainted with classics to *Philhydrus*; more recently others who considered themselves authoritatively acquainted with classics say that *Philhydrus* is "classically" as correct as *Philhydrus* (or more correct, I forget which), and so *Philhydrus* is reverted to. This point would not be worth alluding to were it not that it is a good example of the uncertainties that "classical emendations" bring into our nomenclature. My own experience leads me strongly to the conclusion that classical emendations in zoological nomenclature are a great nuisance, and in addition to being eminently uncertain, are quite unphilosophical; the object in making a generic name is to make one of a suitable nature, and distinct from existing generic names, so that change will not be required; and I do not think classical purists have any right whatever to introduce instability into the system by saying that the name must be formed in a particular way; that particular way being the one they consider the Greeks would have adopted had they made the name two or three thousand years ago! A more correct view is that some thousands of years ago Greek names "grew up" according to ways that were found convenient

and practicable, and were not established according to any set of rules or principles; and I think, therefore, the practice of "emending" in conformity with the supposition that a particular line of formation would have been adopted by the Greeks is a bad one. This has always been my own opinion, and I am now pretty well convinced by the course of recent discussions that it is the view that will ultimately prevail.—D. SHARP, Cambridge: *March 16th*, 1892.

Obituary.

George Haggard died on the 10th January last at his residence, Ore, Hastings, of bronchitis, aged 75. He was not known to the present race of entomologists, but 40—50 years ago he was an ardent collector of *Lepidoptera*, and though he made no claim to scientific knowledge he had a keen perception of apparent differences of species. He deserves honourable mention and record as one of the men of the time who did very much to ascertain by actual investigation what species inhabited Britain. He was then my constant and genial companion, and I have a vivid remembrance of the many hunting excursions we made together, both by day with nets, and by night with sugar-pots and lanterns. He made many notable captures of species then very rare, such, for example, as *Leucania turca*, *Cucullia gnaphalii*, and *Eupithecia togata*, and he was (with me) the re-discoverer, at St. Osyth, of *Geometra smaragdaria*. His great delight was in hunting,—to make a collection was a secondary object, for he gave away all his captures.—J. W. DOUGLAS.

Francis Archer, B.A.—It is with great regret I announce the death of my late friend Mr. Francis Archer, B.A., &c., &c., who passed away on Monday last, after a week's illness of diphtheria, at his residence, 21, Mulgrave Street, Liverpool, aged 52. He was the son of the late Francis Archer, M.R.C.S., a well-known medical practitioner in Liverpool, who was also a naturalist, his speciality being conchology. He left two sons, both of whom inherited their father's inborn love of Natural History. His eldest son, Surgeon-Major Samuel Archer, has been much abroad with his regiment, and for years has been in the habit of contributing valued objects of Natural History to the Liverpool Museum. His brother, whose death we now so deeply mourn, held a high position in his profession, that of a solicitor in Liverpool, and was much respected and loved by his *confrères*, a number of whom were present at his funeral yesterday. Mr. Archer was a man of high culture, and most genial disposition, an ardent politician, and a born naturalist. He was one of the first who appreciated the late Mr. Darwin's views on the "Origin of Species," &c. He possessed a very practical knowledge of conchology and entomology, and was always ready to assist and encourage young people in their scientific and natural history investigations. He was one of the first to enrol himself a Member of our Lancashire and Cheshire Entomological Society, in which he always took a deep interest. His loss at so comparatively young an age is, indeed, very great. Those who knew him intimately, as I have done for the last 25 years, will mourn a kind congenial friend, whilst science has one less ardent follower in Liverpool.—SAMUEL JAMES CAPPER, Huyton Park: *March 4th*, 1892.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *March 14th*, 1892.—Rev. C. F. THORNEWILL in the Chair.

Mr. R. C. Bradley showed several species of *Culex* taken at Sutton. Mr. G. T. Bethune-Baker showed *Scopariæ* from St. Helena, which differed from British *Scopariæ* in the possession of deeply serrated antennæ. Mr. Baker said that even from the mainland of Africa, nearest to St. Helena, he knew of no *Scopariæ* with the same characteristics. Mr. G. H. Kenrick read a paper, "Some considerations on Insects confined to small areas." He touched briefly upon self-evident causes of localisation, mountain chains, &c.; he entered fully into the causes of the presence on our coast lines, in the fens, woods, &c., of many species only found in those restricted districts in our country, though found in similar ones on the continent; he remarked that it seemed peculiar to find so many species restricted to so small an area as our fens, for example, and showed that they represent a once very wide extent of country, all fen, extending over the German Sea to, and including, Holland, and of which our Lincolnshire and Norfolk Fens, and those in Holland, are all that is left; the insects inhabiting this wide extent of country are now, to a considerable extent, crowded into the few remaining spots, and hence we get many peculiar species in a small area; he believed the same applied to coast species: our coast line having once formed part of a very much more extended continental coast line; to wood species, our woods being the remains of former extensive forests, &c. A discussion followed, in which Rev. C. F. Thornewill, Messrs. G. T. Bethune-Baker, R. C. Bradley, and C. J. Wainwright joined.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *March 14th*, 1892.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Messrs. H. Locke, of Birkenhead; and G. Norel Deville, of Crosby; were elected Members.

The President referred to the loss the Society and Naturalists generally had sustained by the death of Francis Archer. Mr. William Webster, of St. Helen's, read a paper, entitled, "Was Shakspeare an Entomologist?" The author stated he had examined the works of the poet, and found 207 references to insects, and, as far as could be ascertained, mention of 30 kinds of insects, and showed by numerous quotations that Shakspeare not only possessed a fair knowledge of entomology, but that he was a philosophical observer of nature. Mr. Willoughby Gardner, F.R.G.S., read a short note on the "Popular names of insects about Shakspeare's time," some few of which still existed in country places. Mr. Webster exhibited *Papilio Zalmoxis*. The President, Messrs. Stott, Harker, and the Hon. Secretary, long and variable series of *Noctua festiva* and *conflua*. Messrs. Harker and Jones, British and continental forms of *Lycæna Icarus*.—F. N. PIERCE, *Hon. Secretary*, 143, Smithdown Lane, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
February 25th, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. J. W. Larkin, of Streatham, and Mr. A. L. Stephens, of Blackheath, were elected Members.

Mr. Cooper exhibited specimens of *Porthesia chrysorrhæa*, L., received some years ago from Whittlesea Mere, and pointed out that there were a number of black dots on the wings. Mr. J. Jenner Weir exhibited examples of several species, showing the wet and dry season forms of the same insect, and remarked that it had now been placed beyond doubt that many species that were looked upon as perfectly distinct, were wet season and dry season forms; among the species exhibited were *Junonia Asterie*, L., *J. Almanax*, L., the wet season form of *Melanitis Ismene*, Cram., and the dry season form of the same, *M. Leda*; and Mr. Weir remarked that the two forms of *Melanitis* were seasonal varieties, or, as he termed it, horæomorphic, of one species, had been set at rest by direct experiments. Mr. R. Adkin exhibited *Lepidoptera* from the Scilly Isles, and remarked on the variation, and called attention to the specimens of *Pieris napi*, L., *Lycæna Icarus*, Rott., and *Cidaria truncata*, Hufn., which he said were species known to be liable to somewhat pronounced local variation, and yet those he had received from Scilly were normal. Mr. Adkin also exhibited light and dark cocoons of *Eriogaster lanestris*, L., and contributed notes. Mr. Tugwell exhibited cocoons of *Nola centonalis*, Hb., and *N. albulalis*, Hb., and referred to some remarks recently made by Mr. Tutt, that the coloration of cocoons was produced by anal excreta; a discussion followed, relative to these two last exhibits, in which Messrs. Jenner Weir, C. Fenn, W. West, South, C. G. Barrett, Carrington, Tugwell, and Adkin, took part. It was pointed out that recent discoveries have shown this to be from renal excreta.

March 10th, 1892.—The President in the Chair.

Mr. Jenner Weir exhibited pallid forms of the following British *Rhopalocera*, viz.: *Satyrus Semele*, ♀, *Epinephele Janira*, ♀, *E. Hyperanthus*, ♀, *Cænonympha Typhon*, ♂, *C. Pamphilus*, ♀ (three specimens), *Heodes Phlæas*, ♂, and remarked that these xanthous specimens were all of them much paler in colour than usual, and regretted that he could not suggest a cause for this want of colour, except in the case of *Epinephele Janira*: this insect he had taken in the New Forest, during the very wet and cold season of 1879, in a damp wood, the temperature was then so low, that when *Argynnis Paphia* was pursued it took refuge in the thick brambles, being too weak to fly far, and *A. Euphrosyne* had its emergence delayed through July, in some cases even till so late as the 9th of August. His view was that the development of pigment was due to what might almost be termed surplus energy, and that if the vitality of either the larva or chrysalis was lowered by unfavourable environment, then the result might be that the imago would be defective in colour. Mr. H. C. Richter then delivered a lecture on Insects, illustrated by original diagrams and coloured drawings. The discussion on Mr. Weir's exhibit stood over until next meeting.—H. W. BARKER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *February 24th*, 1892.—FREDERICK DU CANE GODMAN, Esq., F.R.S., President, in the Chair.

The Secretary read a letter from General Sir Dighton Probyn, K.C.B., Comptroller to the Prince of Wales, conveying the thanks of the Prince and Princess of Wales for the address of condolence with their Royal Highnesses in their severe bereavement, which had been forwarded to Sir Dighton Probyn by the Secretary, on behalf of the Society.

Mr. Walter Cuthbert Biddell, of 32, The Grove, Bolton Gardens, S.W.; and Mr. Douglas Stuart Steuart, of North Leigh, Prestwich, Lancashire; were elected Fellows of the Society.

The President referred to the loss the Society had recently sustained by the death of Mr. Henry Walter Bates, F.R.S., who had twice been its President; and he also read a copy of the resolution of sympathy and condolence with Mrs. Bates and her family, in their bereavement, which had been passed by the Council at their meeting that evening.

Mr. Frederick C. Adams exhibited a monstrous specimen of *Telephorus rusticus*, taken in the New Forest, in which the left mesothoracic leg consisted of three distinct femora, tibiæ, and tarsi, apparently originating from a single coxa; he also exhibited specimens of *Ledra aurita*.

Mr. G. A. James Rothney sent for exhibition a series of specimens of two species of Indian ants (*Myrmecaria subcarinata*, Sm., and *Aphænogaster (messor) barbarus*, L., var. *punctatus*, Forel), which had recently been determined for him by Dr. Forel. He also communicated notes on the subject, in which it was stated that *Myrmecaria subcarinata*, Sm., was not uncommon in Bengal, and formed its nests by excavating the earth round trees, and throwing it up in mounds of fine grains. The author also stated that both sexes of this species swarmed early in the "rains," from about July 7th to July 10th. Of the second species—*Aphænogaster barbarus*, var. *punctatus*, Forel—Mr. Rothney observed that it, like the bee, *Apis dorsata*, seemed to have a great partiality for the gardens and buildings of the old Mogul Emperors in the North-West Provinces and in the Punjab, the bee disfiguring the arches and roofs with its huge nests, and the ant frequenting the gardens and steps.

The Hon. Walter Rothschild communicated a paper, entitled, "On a little-known species of *Papilio* from the Island of Lifu, Loyalty Group." The paper was illustrated by a beautifully coloured drawing of the male, variety of the male, female, and under-side of the species.—H. Goss, *Hon. Secretary*.

March 9th, 1892.—The President in the Chair.

Captain Clement Alfred Rigny Browne, R.E., care of Messrs. Grindlay, Groome, and Co., of Bombay; His Grace the Duke of Devonshire, LL.D., Chancellor of the University of Cambridge, of Devonshire House, 78, Piccadilly, W.; Mr. J. H. Leslie, of 44, Cheriton Square, Upper Tooting, S.W.; Mr. R. M. Lightfoot, of Bree Street, Cape Town, Cape of Good Hope; and Mr. Sidney Robinson, of Goldsmith's Hall, E.C.; were elected Fellows of the Society.

Professor C. Stewart, President of the Linnean Society, exhibited and made remarks on specimens of *Cystocalia immaculata*, an Orthopterous insect from Namaqualand, in which the female is far more conspicuously coloured than the male, and the stridulating apparatus of the male differs in certain important details from that of other species. A long and interesting discussion ensued, in which Dr. Sharp, Mr. Poulton, Mr. Distant, Mr. H. J. Elwes, Colonel Swinhoe, and Mr. Hampson took part.

Mr. Elwes exhibited specimens of *Ribes aureum* which were covered with galls, as to the nature of which the Scientific Committee of the Horticultural Society desired to have the opinion of the Entomological Society. Mr. Fenn, Mr. Tutt, and Mr. Barrett made some remarks on these galls. Mr. Elwes also exhibited a large number of species of *Heterocera* recently collected by Mr. Doherty in South-East Borneo and Sambawa. Colonel Swinhoe, Mr. Hampson, and Mr. Distant took part in the discussion which ensued.

Mr. Barrett exhibited a series of specimens of *Noctua festiva*, bred by Mr. G. V. Hart, of Dublin, which represented most of the known forms of the species, including the Shetland type and the form formerly described as a distinct species under the name of *Noctua conflua*. Mr. Fenn and Mr. Tutt made some remarks on the specimens.

Mr. W. C. Boyd exhibited a specimen of *Dianthæcia Barrettii*, taken at Ilfracombe last summer. It was remarked that Mr. W. F. H. Blandford had recorded the capture of *D. Barrettii*—which had until recently been supposed to be confined to Ireland—from Pembrokeshire, and that its capture had also since been recorded from Cornwall.

Mr. Tutt exhibited specimens of *Polia xanthomista* from Mr. Gregson's collection, which had recently been sent to him by Mr. Sydney Webb.

Mr. G. A. James Rothney exhibited and read notes on a large collection of Indian Ants, which he had made in Bengal between 1872 and 1886, comprising some ninety species. He stated that eighteen of these species had been described by Dr. Mayr in his paper, entitled, "Ameisen Fauna Asiens," 1878; he also said that Dr. Forel had recently identified several other new species in the collection, and that there were about ten species and one new genus which Dr. Forel had not yet determined.

Mr. H. Goss exhibited, for Mr. T. D. A. Cockerell, of Kingston, Jamaica, several specimens of palm leaves, from the garden of the Museum in Kingston, covered with *Aspidiotus articulatus*, Morgan. The leaves appeared to have been severely attacked, the scales entirely covering the upper surface in places.

Mr. F. D. Godman contributed a paper by the late Mr. Henry Walter Bates, with an introduction by himself, entitled, "Additions to the Longicornia of Mexico and Central America, with remarks on some previously-recorded Species."

The Rev. A. E. Eaton communicated a paper, entitled, "On new Species of *Ephemeridæ* from the Tenasserim Valley."—H. Goss, *Hon. Secretary*.

OUR RUSH-FEEDING *COLEOPHORÆ*.

BY JOHN H. WOOD, M.B.

One result of the investigation I recently undertook into the organs of oviposition in the *Lepidoptera* has been the light incidentally thrown upon an obscure group of the *Coleophoræ*, in which, from the similarity of the species, great confusion exists as to their true number and limits. When the "Manual" was written, nearly 35 years ago, only two rush-feeding *Coleophoræ* (*murinipennella* and *cæspititiella*) were included. Since then *adjunctella* and *obtusella*, both exclusively coast insects, have been added; but the inland species have remained much in *statu quo*, although it has been known for some time in certain quarters that at least one unrecognised species, if not more, was hidden away under one or other of the old names, and only wanted to be eliminated. I had worked at the inland species myself, as opportunity offered, for several years, but so slow had progress been, that when I began in the spring of 1890 to catch any moth that came in my way for the purpose of examining its tail end, I had only succeeded in marking off one undoubtedly distinct species.

Now, one of the earliest insects I examined in that investigation was the *Coleophora* that flies in May among *Luzula campestris*, and which Mr. Stainton assures me is the true *murinipennella*. Shortly afterwards, wanting again to refer to this type of ovipositor, and *murinipennella* being over, I had to turn for a substitute to its near ally, *cæspititiella*. I found, as was to have been expected, an organ of precisely similar pattern, but differing in the details of one important part, namely, the lower end of the genital canal where it opens externally on the under-side of the 8th segment. The difference was so marked, that it struck me at once that here might be the clue to the secrets of the entire group; and so magical has the effect of this line of enquiry been in bringing into their proper order and importance the fragmentary observations and half-formed opinions that had been slowly accreting in the past, that I am now able to break up the *murinipennella* and *cæspititiella* of our collections into five good and distinct species. I would not, however, have it to be supposed that we must subject these delicate insects to mutilation and disfigurement before we can satisfactorily determine them. The superficial differences may not, perhaps, be quite apparent enough, except to a practised eye, to allow us to capture them as carelessly as we do the generality of species, but by noting the time of year, the nature of the locality, and the kind of rush present, there need be little doubt as to

the particular species before us, whilst absolute certainty may be attained by taking the trouble to collect and rear the larvæ. The anatomical question, then, apart from its intrinsic interest, will be chiefly of importance by serving as a Court of Appeal, if I may so term it, before which we shall be able to bring any suspicious forms we cannot make up our minds about.

As all five occur within three or four miles of my own door, it is more than likely that other species are yet waiting to be differentiated. Indeed, there can be no doubt that I am fortunate enough to possess such another even here, for I found last autumn a species, which in its case and larval characters is so totally unlike any of the rest, that it cannot fail to be new. As I hope to breed it in the course of the coming summer, I will say nothing further about it now.

They may be summarized thus : —

1st.—Fore-wings moderately narrow, and moderately pointed. Case compound, constructed partly of the rush flower, and partly of silk. Two species.

(a) *Sylvaticella*, n. sp.—A large insect ; fore-wings greyish, unstreaked ; antennæ white. Flies in woods (hence its name), in May. Larva on *Luzula sylvatica* ; two years in feeding up.

(b) *Alticolella*, Zell.—A small insect ; fore-wings yellowish, streaked with white ; antennæ annulated on the inner face with pale fuscous. In fields and woods, in July. Larva on *Juncus lamprocarpus*, more rarely on other species, in autumn and early winter.

2nd.—Fore-wings narrow and very pointed. Case simple. Three species.

(c) *Murinipennella*, Fisch.—Fore-wings grey, streaked conspicuously with white ; antennæ annulated all round with dark grey. On commons and flowery meadows, in May. Larva on *Luzula campestris* and *multiflora* in the autumn. Case brownish-ochreous.

(d) *Cæspititiella*, Zell.—Fore-wings grey, unstreaked ; costa conspicuously white ; antennæ annulated on the inner face with grey. Flies in June. Larva on many kinds of *Juncus*, rarely on *J. glaucus* ; full-fed at the end of autumn. Case whitish.

(e) *Glaucicolella*, n. sp.—Very like *cæspititiella*, but yellower ; antennæ as in *cæspititiella*, or sometimes in ♀ entirely white. Flies in July. Larva on several kinds of *Juncus*, most partial to *J. glaucus* ; not full-fed till the spring. Case whitish.

C. SYLVATICELLA.

Exp. al., $5\frac{1}{2}$ — $6\frac{1}{4}$ lin. Fore-wings greyish-ochreous ; costa paler in some lights, but not distinctly white as in *cæspititiella* ; costal fringe at the apex ochreous. Head and thorax greyish-ochreous (in all the species these parts appear to be of the same shade of colour as the fore-wings). Antennæ white.

The largest species of the lot. The white antennæ, the unstreaked fore-wings, with, at the best, but an ill-defined whitish margin to the

costa, serve amply to distinguish it. It was quite new to Mr. Stainton. Mr. Fletcher, too, whose insight into these puzzling insects is considerable, seems also to be unacquainted with it. To a certain extent local, it will probably be found wherever the *Luzula sylvatica* occurs in any quantity. In my own immediate neighbourhood the plant grows only at Haugh Wood, one of the largest of Herefordshire woods, and a remnant, to all appearance, of the primitive forest land. Happy is the Naturalist that has such a place within his reach, with its dense covert, its rare and interesting vegetation, its boggy runlets and varied surface! Here it is that *sylvaticella* may be taken flying in the day time among the patches of the wood rush at the end of May and beginning of June, and here, of an afternoon, the females may be seen laying their eggs deep in the rush flowers, after the manner of these species.

The larva is of the usual Coleophorous type. In this type the larva is short, rather stout, with weak ill-developed ventral legs, a small head, powerful 2nd segment, and large and strong plates; the latter not being confined to the 2nd and anal segments, but being present on the 3rd, and often on the 4th as well. The large plate on 2nd has the usual dividing line down the centre, but the plates on 3rd and 4th are not only divided longitudinally, but each lateral half is again divided obliquely in such a way that, of the four resulting parts or sub-plates two are inner and posterior, and the other two outer and anterior. This division, I may add, follows the line of a natural sulcus that crosses the back of the segment in this situation. Frequently the full complement of sub-plates is not present, one or other pair being suppressed, and in the case of the 4th segment the suppression may even extend to both pairs. In addition to the dorsal plates, each thoracic segment is furnished with a plate in the spiracular region.

This consolidation of the thoracic segments is found in case-bearing larvæ generally, as well as in some that burrow in the ground like the *Hepialidæ*, and has commonly been attributed to the friction to which, under the peculiar circumstances, this part of the body is exposed. Natural as the explanation sounds, I am not sure that it is the true one. It is well to remember that strength of integument is usually correlated in insects with muscular development. There can be no question either that the thoracic segments have here especially heavy work to perform, since, in the case bearers, the transportation of the whole animal, case and all, devolves upon them, and, in the burrowers, the same segments are the chief agents in tunnelling through the soil. I would, therefore, suggest that these chitinous deposits, instead of being the outcome of friction, are the result of the increased development of the muscles and their exaggerated pull and strain upon the integument, just as in our own skeletons, the bigger the muscles the bigger are the bony ridges with which they are connected.

The larva is to be known from any of the others described in this paper by its pallor. It is semi-transparent, and of a dirty whitish colour. Head brown, with mouth and eye spots black. Dorsal plate on 2nd brown, with a blackish border behind. The four sub-plates on the back of 3rd brown, with greyish centres. The inner pair of sub-plates on 4th absent; the outer pair brown, sometimes grey. Plates in the spiracular region of 2nd, 3rd, and 4th greyish-black. Anal plate greyish-black. Legs pale grey or brown.

Like its allies, the larva lives for some time inside the seed-capsules, before it thinks of making a case. This case is composed of two distinct parts: an outer part, consisting of the seed-envelopes of the rush; and an inner part of woven silk, which in the full-sized case projects considerably beyond the outer one. It differs in no respect, except its greater size, from the case of *alticolella*; and as it is in connection with the latter insect that I have more particularly studied it, I will reserve the few observations I may have to make until I come to that species. All, therefore, I need now say with regard to *sylvaticella* is, that the cases make their appearance late in the summer, and look at first like detached fruitlets of the rush; that by the end of autumn they are about as large as full sized ones of *alticolella*; the larvæ then hide away till the following spring, when they may be found early in May upon the new panicles, eating out the hearts of the flowers, a month later they have completed the dimensions of their cases; some time in July or August they once more retire to pass a second winter in some secure spot; in the spring they pupate, and last of all the perfect insects make their appearance towards the end of May. Thus two complete years are spent from one egg-laying to the next in descent.

C. ALTICOLELLA.

Exp. al., $4\frac{3}{4}$ — $5\frac{1}{4}$ lin. Fore-wings ochreous-yellow, streaked with fine white lines, that run the whole length of the wing; costal margin edged by one of these lines; costal fringe at the apex ochreous-yellow, tipped along the free border with white. Antennæ rather thick, annulated on the inner face nearly to the tip with pale fuscous, entirely white on the outer face. It is the smallest and yellowest of the group, and if to this be added the streaked condition of the wings, its identification can scarcely be missed.

Larva, yellowish-red, or mahogany coloured, rather paler on segments 2nd and 3rd. Head brown, with black mouth and eye spots. Colour of the several dorsal plates of the thorax rather variable, ranging from dark grey to blackish; sometimes brown, and then the plate on the 2nd has a blackish border behind, and those on the 3rd have grey centres. The anterior sub-plates on the 4th small and indistinct, the posterior pair quite absent. Spiracular plates on 2nd, 3rd, and 4th dark grey or blackish. Anal plate black. Legs grey.

It feeds on *Juncus lamprocarpus* and *acutiflorus*, and had I been writing six months ago, I should have said that it confined itself exclusively to these rushes. My acquaintance with it began in 1884, when I found it on *lamprocarpus*; the next year I took it on *acutiflorus*; and since then I have frequently collected or observed it upon the first-named. This is a rush that with me generally intergrows

with one or other of the taller kinds, such as *glaucus* and *effusus*, and though the latter were always more or less included in the search, I never succeeded in finding any cases upon them until last autumn, when they occurred in moderate quantity upon *effusus*, and in odd instances upon *glaucus* and *conglomeratus*. Now, the rush-*Coleophoræ* were unusually abundant last year, both as imago and larvæ, and *alticolella* fully participated in the abundance; and it is under such conditions, as I think all entomologists will agree, that eccentricities of diet are apt to be noticed. For instance, I have known two occasions when the larvæ of *Tischeria complanella* invaded the Spanish chestnuts (*Castanea vulgaris*), and on each the insect was swarming in the leaves of its natural food, the oak; on another occasion the same very unpalatable plant was taken possession of by *Nepticula sub-bimaculella* at a time when it too was in overwhelming numbers in the oak leaves. I think, therefore, we may still conclude that *J. lamprocarpus* and *acutiflorus* are the natural food of *alticolella*, and that its presence on any other rush is accidental or exceptional. The larvæ, I should add, are to be found all through the autumn, and become full-fed about the end of November.

The case is a handsome structure, ornamented round the lower part with the perianth of the rush, and above this again with the three large, black, and shining valves of the capsule. The mouth is of silk, it is turned somewhat down, and is joined to the body by a sort of neck, which is much roughened on the exterior by tiny particles of vegetable matter. At the other end is the free portion of the inner case, projecting beyond the seed-envelopes, and taking up rather more than one-fourth of the length of the entire structure; this is made of clean silk, without any admixture of foreign material, its colour being usually white, but sometimes grey; it is pinched in, as it were, at the extremity which gives it a triquetrous shape, and it is furnished with the ordinary three-valved orifice. Such is the appearance of the full-grown and typical case when the larva has fed upon *lamprocarpus* or *glaucus*, but should the plant have been *acutiflorus* or *effusus*, then, as these rushes have smaller and paler capsules, so the case is correspondingly modified, and at first sight might almost be supposed to belong to another species.

But the case did not start into existence fully equipped in accordance with the foregoing description. In its earliest beginning its appearance was very different, and as it has already been admirably described by Mr. Stainton in Nat. Hist. Tin., under *murinipennella*, I cannot do better than transcribe the passage. He says, "No doubt in the first instance it contents itself with eating out the interior of a seed, but having done this, it takes possession of the empty seed-husk and adopts it as its case; in this it proceeds to an adjoining seed, and, attaching its case to the outside, bores into the interior like any other

seed-feeding larva of this genus, but, from the nature of its case, its appearance is so very deceptive, that it is very difficult to detect these larvæ, even on a careful search."

The deception is most complete, for at first not a trace of the white inner case is to be seen peeping above the husks, and the capsule, still closely shut, wears the most natural and innocent of looks, so that nothing but some awkwardness in the position in which it may happen to be moored can betray it. If this innocent looking capsule be opened, there will be found inside a small silk bag, and within this the larva itself, very small, but, nevertheless, in its penultimate skin, this being, so far as my experience goes, the invariable age at which its case-bearing life begins. The little silk case is literally a bag, for there is no opening whatever at the anal end, and the frass has, therefore, to accumulate within, or else must be passed downward by a kind of wriggling movement and got rid of by the mouth. That the latter is the method followed can scarcely be doubted, as it is quite unusual to find even so much as a single grain retained when an examination is made.

I am indebted to Mr. Fletcher, who has long been familiar with the insect, for having pointed out to me that it was probably the *alticolella* of Zeller; whilst Mr. Stainton's *dictum*, after seeing my specimens, was "agrees well enough with Zeller's *alticolella*."

(To be continued.)

FURTHER NOTES ON *EUPITHECIA EXTENSARIA*.

BY G. T. PORRITT, F.L.S.

Since I found the larvæ of *Eupithecia extensaria* near Hunstanton, at the end of August, 1889, I have reared some hundreds of them, and a few notes, supplementary to Mr. Barrett's (Ent. Mo. Mag., xxv, p. 258), will probably be not without interest. The larvæ collected at large produced moths freely the following June, and I had no difficulty in pairing a number of them over a growing potted plant of *Artemisia maritima*, which I had had for some time awaiting their advent. Soon eggs were deposited in considerable numbers; they were placed singly, but often a number in close proximity, on the slender leaves of the food-plant, and each moth, after laying three or four eggs or so, would usually fly up from the plant to the gauze covering, to fly down again almost immediately to some other sprig, and continually repeat the same performance. No doubt its habit in the natural habitat would be to fly from sprig to sprig, and from plant

to plant, in which case eggs from one moth might extend over a considerable area. The wonder, then, is that its habitat should be so exceedingly restricted, as it appears to be, on the Norfolk coast (see Ent. Mo. Mag., xxv, pp. 258 and 398).

The egg is of fair size, oblong-oval, bright glistening orange-yellow. Those first deposited, about June 17th, hatched out in numbers on the 29th and 30th, and by July 4th all of them seemed to be out; the minute newly emerged larvæ were yellow, tinged with green. By July 14th, they were nearly a quarter of an inch long, pale yellow or greenish, and having faint indications of darker dorsal and sub-dorsal lines. A fortnight later, on the 28th, many of them had attained to five-eighths of an inch, were slender, and tapered a little towards the head. Colour now bright green, a little freckled with white dots, the sub-dorsal and spiracular stripes clear white, but as yet with no indication of the pink colouring on the spiracular region, which was so noticeable in the parent larvæ; head bright green, the mandibles, and also the tips of the anterior legs, pale brown.

Prior to this time, the growing plant of *Artem. maritima* had been eaten away, and it being inconvenient to have to send to Norfolk for a fresh supply every time it was wanted (as I had done the previous autumn), I tried the larvæ with *Artem. vulgaris*, and the garden "Southernwood," *Artem. abrotanum*. Of the former they ate very little, but I was pleased to find that they took to the latter with evident relish, and I have never since had any anxiety as to their food supply, having fed them exclusively on this plant.

On August 9th, the largest larvæ were nearly an inch and a quarter long, and apparently full-grown; and by the 20th they were spinning up rapidly. They were proportionately rather stouter, but the only variation in colour, from the description made of July 28th, was in the sub-dorsal lines, which were not so white, being formed apparently of a white powdering, through which the green distinctly asserted itself; the spiracular stripes were still intensely white, as was also a ventral central stripe. What surprised me very much was, that in the over four hundred larvæ I reared in 1890, not a single one showed the least trace of the pink marking so pretty and conspicuous in many of the captured larvæ of 1889; nor did it re-appear at all in any of the larvæ of the succeeding generation I reared last year. The pink colour was of exactly the same tint, and evidently appeared simultaneously with the flower buds of the *Artemisia maritima*, and is doubtless a good example of protective assimilation; whereas, the *Artemisia abrotanum* being always green (I have never seen it flower at all in Yorkshire), the appearance of the pink on the larvæ would have been not only useless, but disadvantageous. But that the larvæ should entirely lose every trace of it, the very first season of their altered environment, was to me most extraordinary.

One of Mr. Barrett's observations, that the larva has an occasional habit of "standing, apparently, upon its head" (Ent. Mo. Mag., xxv, p. 258), I am not able to confirm. This statement seemed to me so remarkable, that I spent hours, during all parts of the day, and well

on in the night, besides requesting a number of friends, to whom I sent larvæ, to watch carefully, with a view to confirm it; but I believe none of us were able to do so. Possibly, Mr. Barrett was not entirely mistaken on the point, but if not, I am quite satisfied that the occurrence he noted was very exceptional if not purely accidental.

The cocoon is spun among the *débris* on the ground, or very often among the leaves or stalks of the food plant; it is oval, toughly formed of brown silk, and rather small for the size of the larva.

The moths emerged in large numbers last June, and, so far as I could see, the changed food, and modified colouring in the larvæ, had not affected the imagines in any respect. From them I have now pupæ again, and so hope to still further experiment with the species during this year.

Huddersfield: *March 14th*, 1892.

ON A NEW *ONTHOPHILUS* FROM MEXICO.

BY GEORGE LEWIS, F.L.S.

ONTHOPHILUS JULII, *n. sp.*

Breviter ovatus, subopacus; thorace obscure æneo; elytris 6-carinatis, carinis multo interruptis; prosterno metasternoque grosse punctatis.

Long., 2 mm.

Short oval, little opaque, black, with a brassy tinge on the thorax; the forehead, coarsely rugose, pitted with irregularly shaped punctures, median carina strong, anterior edges raised, meeting in a point behind the epistoma, on each side near the eye is a small emargination on the frontal edge; the thorax faintly brassy, lateral margin raised, central area 6-carinate, outer carina short and a little oblique, the next nearly as long again, much shortened behind the head, less so at the base, two median much longer, shortened only at the base, and posteriorly widening out a little from each other, surface closely covered on the sides with large round punctures, interstices of the punctures very slightly raised, the basal edge behind the carinæ is transversely punctured, punctures circular, but much smaller than those of the lateral margins, the interspaces between the four median carinæ have somewhat oblong punctures, and the interstices of the punctures are arranged longitudinally in a strigose form; the elytra having the carinæ much broken, giving the dorsum when viewed sideways an appearance of having a number of small tubercles, first carina longest, portion at the base twice broken, apical part shortest, second indistinct, but apparently twice interrupted, third in three distinct portions, fourth very widely broken in the middle, fifth much less distinct but more complete, sixth feebly raised, broken at intervals, sutural elevation shortened before the scutellum, interstices of all the carinæ trilinear, with transverse impressions at short distances; the propygidium and pygidium are roughly punctate, the first with a median carina; the prosternum wholly covered with large circular punctures, base sinuous; mesosternum narrow,

transverse, similarly punctured, the suture indicated by a carina, which is irregular, owing to the punctures encroaching on its course; the metasternum and the first segment of the abdomen are punctured somewhat like the mesosternum, but many of the punctures are larger; the legs dull reddish-brown, anterior femora coarsely punctured on the lower surface.

Hab.: Mexico. A single example was taken last October by Mr. Julius Flohr from "beneath decaying plants on the Sacromonte at Amecameca, alt. 8300 feet."

Folkestone: *March 5th*, 1892.

NOTE ON *ORTHOTYLUS OCHROTRICHUS*, DOUG. AND SCOTT.

BY EDWARD SAUNDERS, F.L.S.

I have recently had occasion to examine our British species of *Orthotylus* with green cell nerves, and was surprised to find that some of those which I have taken near Woking are quite distinct from *Scotti*, as described and figured by Reuter (Hem. Gym. Eur., iii, p. 356, pl. v, 17), and were apparently referable to his *propinquus*; to make sure of this I wrote to Professor Reuter, who very kindly sent me his type specimens to examine, which quite confirmed the opinion I had formed from his work.

I was about to bring *propinquus* forward as a new British species, when it occurred to me that before doing so I ought to examine the type of *ochrotrichus*, D. & S., now in the British Museum. This, with the assistance of Mr. C. O. Waterhouse, I have now done, and find that *propinquus* and *ochrotrichus* are identical; the latter name being the older will take precedence, so that now we have four closely allied species, *viridinervis*, Kb., *prasinus*, Fall., *Scotti*, Reut., and *ochrotrichus*, D. & S., all, I believe, inhabiting elm trees, the last named was originally described from a single ♂ said to have been taken on *Ononis*, and which had peculiar small yellow spots on the elytra.

I examined this specimen years ago, and feeling convinced that these spots were merely due to some casual irregularity in the distribution of the green pigment, I considered it merely as a variety of *Scotti*; on re-examination, however, it proves to have the peculiarly formed genital forceps of *propinquus*, the left hand one of these is very convex outwardly at the base, rounded and denticulated along its upper margin, and has its lower margin produced laterally into a long, rather twisted, pointed process; the right hand one is stipitate, triangular, and truncate at the apex; it may be also known by the distinct carina along the vertex in both sexes. The specimens I have are all

entirely green, without traces of yellow spots. They have been taken, I believe, on elm trees at Woking and Chobham, and a single specimen at Ilfracombe. It is probably a common species, but overlooked.

St. Ann's, Woking:

April 7th, 1892.

NOTE ON *DULICHIOUS WROUGHTONI*.

BY E. BERGROTH, M.D.

In the April number of the current volume of this Magazine, p. 107, I described a new Hemipterous insect under this name. Some days before this description was printed, I received Mr. Kirby's recent paper on the *Hemiptera* of Ceylon, and found the insect described in this paper under the name *Formicoris inflatus*, new gen. and sp. As I said in my notice, the insect belongs to the genus *Dulichius* of the family *Coreidae*, although Mr. Kirby says that "it is undoubtedly one of the *Reduviidae*," and places it near *Myocoris*! I am quite unable to explain such a curious mistake. Mr. Kirby's description has priority, and the insect must take the name *Dulichius inflatus*, Kirby.

When describing the species I had only seen some hairless examples. Having recently received a specimen in very good condition, I find that the following must be added to the description:—*Corpus totum cum spinis, antennis pedibusque longe parce erecte pilosum*.

Tammerfors, Finland:

April 6th, 1892.

ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

(Continued from page 97).

31.—*MASICERA*, Mcq.

BLEPHARIPA, p. Rnd.

CEROMASIA, p. Rnd.

Gen. ch.—Eyes nude, widely separated in both sexes, but rather nearer together in the male than female; fronto-orbital bristles extending about as low as the root of the arista; facial setæ mostly few in number; antennæ with the second joint usually short, and with the third three or four times as long; vibrissæ with the large bristles placed near to the epistome; abdomen often wide and ovoid, as in the

Muscidæ, and either with or without discal setæ; wings with the fourth longitudinal vein angularly bent, and without cubital appendix; legs with the hind tibiæ either evenly or irregularly ciliated on their outer sides.

This genus is closely allied to *Tachina*; the genera chiefly differ by the comparative lengths of the second and third joints of the antennæ, in *Tachina* the second being longer, and the third shorter, than those in *Masicera*. The wings also mostly have a cubital appendix in *Tachina*, and not in *Masicera*; and, lastly, the abdomen is usually wider and more oval in the latter than in the former genus.

- | | | | |
|----|------|---|-----------------------------|
| 1 | (4) | Hind tibiæ with an even row of short bristles on their outer sides (<i>Blepharipa</i> , Rnd.). | |
| 2 | (3) | Palpi yellow | 1. <i>major</i> , Mcq. |
| 3 | (2) | Palpi black | 2. <i>atropivora</i> , Dsv. |
| 4 | (1) | Hind tibiæ armed with bristles of unequal lengths. | |
| 5 | (8) | Middle abdominal segments without discal setæ (<i>Masicera</i> , Rnd.). | |
| 6 | (7) | Arista thickened for four-fifths of its length | 3. <i>sylvatica</i> , Flm. |
| 7 | (6) | Arista only thickened for about one-third of its length... | 4. <i>pratensis</i> , Mgn. |
| 8 | (5) | Middle abdominal segments with both discal and marginal setæ (<i>Ceromasia</i> , Rnd.). | |
| 9 | (16) | Tibiæ black. | |
| 10 | (13) | Arista thickened nearly to the end. | |
| 11 | (12) | Thoracic stripes of unequal widths, and apical cross veins curved... | 5. <i>myoidæa</i> , Dsv. |
| 12 | (11) | Thoracic stripes of equal widths, and apical cross veins straight... | 6. <i>juvenilis</i> , Rnd. |
| 13 | (10) | Arista only thickened along the basal third. | |
| 14 | (15) | Abdomen grey and immaculate | 7. <i>egens</i> , Egg. |
| 15 | (14) | Abdomen spotted | 8. <i>parva</i> , Mcq. |
| 16 | (9) | Tibiæ yellow | 9. <i>rutila</i> , Mgn. |

M. MAJOR, Mcq.

Rusty-black; frontalia of male occupying about one-fourth of the width of the head; frontal stripe reddish-brown, rather wider than sides of frontalia; face yellowish-white, with dark reflections; facial setæ extending nearly half way up the fascialia; antennæ with the first and second joints ferruginous, the third blackish-grey, and three times as long as the second; arista tapering gradually, thickened for about half its length; palpi yellow; thorax with four narrow and rather indistinct stripes, and four outer dorso-central bristles behind the groove; scutellum testaceous, and rather translucent; abdomen wide and oval, red on the sides in the male; tessellated with black and white patches, and having narrow white rings on the front margins of the second and third segments; discal setæ wanting; wings yellowish-grey, apical cross veins curved, outer cross ones placed obliquely, and nearly straight; legs black, hind tibiæ ciliated along their outer sides with an even thick row of rather short bristles. This fine species is in Mr. Dale's collection; it was taken at Bristol.

M. ATROPIVORA, Dsv.

Head short and wide, with forehead and face flat; frontal stripe brown; sides of frontalia with face white, with blue-black reflections; antennæ black, with third joint about three times the length of the second; palpi black; arista thickened for two-thirds of its length; facialia almost bare; thorax black, with much white pubescence on sides and front margin, marked with four broad stripes, and having four outer dorso-central bristles behind the groove; scutellum testaceous, with base dark; abdomen whitish-grey, with the hinder edges of the segments and a dorsal band black; the sides are rufous in the male; no discal setæ; wings with fourth longitudinal vein bent at a right angle, the rest of the apical cross vein straight, outer cross vein straight; legs with hind tibiæ ciliated with short and strong setæ of even lengths. This well marked species is parasitic upon *Sphinx Atropos*, a large number of flies often emerging from a single caterpillar. In 1879, I received several specimens from Mr. Bignell which he had bred; I hoped at the time that the larva had been found in England, but Mr. Bignell told me afterwards that he received them from the Mediterranean. The species is common in Italy and the south of France.

M. SYLVATICA, Fln.

Black, with grey pubescence; eyes wide apart; fronto-orbital bristles in a double row (posteriorly) in both sexes; frontal stripe brown, about equal in width to the sides of frontalia; antennæ with the third joint four times as long as the second in the male, but rather shorter in the female; arista thickened for about four-fifths of its length; palpi black with red ends, and a little clavate; facialia almost bare; thorax marked in front with four black stripes, which soon become confluent; outer dorso-central bristles three in number behind the groove; scutellum testaceous at the end; abdomen tessellated with black and white; middle segments without discal setæ; fourth segment very spinose, and having the apex clubbed or thickened in the male; wings with from four to six bristles at the base of the third vein; apical cross vein nearly straight; legs black, with the hind tibiæ unevenly ciliated. This large fine species, the males of which resemble those of *Sarcophaga carnaria* in shape, is not common; it has been bred by Mr. Billups from *Saturnia carpini* and *Pieris brassicæ*.

M. PRATENSIS, Mgn.

This species closely resembles the former in colour and design, but is smaller; it has the antennæ with the second joint rather longer, but the third shorter than in *M. sylvatica*, the latter being scarcely three times as long as the former; the arista is not thickened for quite half its length, and is a little pubescent; the frontal stripe is rather wider than the sides of the frontalia; the wings have only one or two small setæ at the base of the third vein, and the apical cross vein is a little more curved than in *M. sylvatica*; in all other points they are very similar. Rare.

M. MYOIDÆA, Dsv. and Mcq.

senilis, Rnd. et Mgn. ?

Female black, covered with hoary pubescence; facial angle oblique; eyes widely separated; frontal stripe piceous, rather wider than sides of frontalia; an-

tennæ with third joint about three times the length of second, which is somewhat elongated; arista thickened almost to the end, and rather short; facial setæ extending fully one-third of the way up the face, which is white, with dark reflections; palpi black; thorax marked with four stripes, the middle pair being narrow, and the outer ones wide and irregular in shape; outer dorso-central bristles four behind the groove; scutellum grey; abdomen hoary, with a narrow black (often indistinct) dorsal stripe, and wide irregular black bands on the hinder parts of the segments; discal and apical setæ both present; wings with one small bristle at the base of the third vein, and with the apical cross vein a little curved; legs black. I do not know the male, but Rondani says the sexes are difficult to discriminate. Not common. I have named this species *myoidæa*, after Desvoidy and Macquart, though Rondani considers it to be the *M. senilis*, of Meigen. It corresponds closely to the description of *M. myoidæa* given by Macquart;* therefore, Desvoidy's name has the priority; besides which, Meigen, in his account of *M. senilis*, states that the arista is only thickened at the base (Wurzel) instead of nearly to the end, and Rondani makes the thickened arista the characteristic feature of the species.

M. JUVENILIS, Rnd.

Male, shining black, with some grey pubescence on front and sides of thorax; face very oblique, eyes widely separated; fronto-orbital bristles in a single row, frontal stripe piceous, rather wider than sides of the frontalia, which are of a bluish-grey colour; the face is white, with black reflections, the lower part, with peristome, being rufous; facial setæ wanting; antennæ with the third joint fully four times the length of second, which is short; arista short, thickened almost to the end; palpi black; thorax with four stripes of nearly equal widths; outer dorso-central bristles four behind the groove; scutellum black; abdomen bright black, conical, with narrow white bands on the front margins of the segments, which have discal as well as apical setæ; wings with a single bristle at base of third vein, and apical cross vein nearly straight; legs black. The female is covered with hoary pubescence, has the abdomen oval, with irregular broad black and white bands, but it is in other points like the male. I captured a male of this rare species near Bicester (Oxon.) in June, 1880, and found a female in the late F. Walker's collection.

M. EGENS, Egger.

Black, uniformly covered with hoary pubescence; frontalia wide, middle stripe piceous, narrower than the sides, which are whitish-grey; face white and oblique; antennæ light grey, with third joint narrow, rather pointed, and about four times as long as the second; arista long and capillar, thickened for about one-fourth of its length; facialia with only a few setæ at the base; palpi piceous or black; peristoma rufescent; thorax with four slender black stripes, and four outer dorso-central post-sutural bristles; scutellum grey; abdomen conical, uniformly grey and immaculate, unless detrited; segments with discal setæ; wings tinged with yellow; apical cross veins straight, outer cross ones sinuous; legs black. Rare.

M. PARVA, Mcq.

Pale grey; face oblique, eyes wide apart; frontal stripe ferruginous, narrower

* Ann. Ent. de France, s. 11, vol. viii, p. 463.

than sides of frontalia, which, with the face, are pale grey; fronto-orbital bristles only reaching to the second joint of the antennæ; facialia bare; antennæ with the third joint narrow, and about four times the length of the second; arista long and slender, with the basal third thickened; palpi black; thorax with four indistinct stripes, the central pair very narrow, the outer ones maculiform; outer dorso-central post-sutural bristles three in number; scutellum grey; abdomen grey, with a narrow dorsal stripe on the second segment, and a rather indistinct brown triangular patch or spot on each side of the second and third segments, those on the latter being very small; both discal and marginal setæ present; wings with apical cross vein nearly straight, and the outer cross one curved; legs black. This very small species (3—4 mm.) is rare.

M. RUTILA, Mgn.

Yellow-grey; facial angle nearly straight; frontal stripe rufous or piceous, rather narrower than the sides of frontalia, which, with the face, are yellowish-white; antennæ brown, with third joint four times as long as the second, which, with the first, is ferruginous; arista thickened to rather beyond the middle; facialia with a few setæ at the bottom; palpi yellow; thorax with four narrow stripes, the outer pair being broken; post-sutural outer dorso-central bristles four in number; scutellum grey, with hinder part luteous; calyptra ochreous; abdomen covered with yellow pubescence, and immaculate, middle segments with both discal and apical setæ; wings tinged with yellow at the base and on the fore border; apical cross vein curved; legs black, with rufous or fulvous tibiæ, the hind ones armed on their outer sides with a number of rather short setæ of irregular lengths. This rare species was found by Miss Prescott-Decie at Westerton, by Elgin.

(To be continued). 150

THE BUTTERFLIES OF RAWAL PINDI AND THE MURREE HILLS (PUNJAB).

BY N. MANDERS, F.E.S.,
Surgeon-Captain, Medical Staff.

(concluded from p. 92).

**Everes ayiades*, Pall.—Common in the autumn at Pindi, but I have no specimens from the Galis, though it probably occurs there.

**Nacaduba Ardates*, Moore.—The tailed form occurs at Pindi in October.

**Catochrysops Cnejus*, F.—Occurs sparingly in the Galis, but is very common near Abbottabad. The species is very constant, and the males a dark blue or purplish colour.

**Jarucus Theophrastus*, F.—There are two broods of this insect, one appearing in April and the other in the rains. The spring brood, which has received the name of *alteratus*, is rather smaller, the ground colour of the under-surface is whitish-fuscous, not a pure white, and the markings are also fuscous, and less distinct. Intermediate specimens between the extreme form *alteratus* on the one hand, and typical *Theophrastus*, with pure white and black markings, on the other, may be

found ; and are likewise dependent on climate. In April, 1890, I found nothing but *alteratus* : the reason of this being that the cold weather and autumn had been exceptionally dry and rainless. In April, 1891, intermediate forms, and occasionally typical *Theophrastus*, were numerous, and this was due to the cold weather being very wet indeed. The under-surface of the hind-wing is the first to be affected. I have specimens with the hind-wing distinctly fuscous, with the upper-wing white and markings black, and the complete series shows the gradual change from this to the insect with fuscous ground colour, and small, narrow, fuscous markings. I have not found *alteratus* in the hills, and should not expect to find it, as there the rainfall is heavier, and few or no varieties develop. It is interesting to note that the female is much less liable to variation ; and the fuscous colouring rarely extends to the upper-wing. Why this is so it is difficult to say, as one would have thought that climate would have acted equally on the constitutions of both.

**Polyommatus bæticus*, L.—Excessively abundant in the park at Pindi, and is common enough throughout the Galis.

Euaspa Milonia, Hew.—Not uncommon at low elevations, and in deep forest, when it flutters about the bushes with feeble flight, and close to the ground.

Chætoprocta odata, Hew.—Abundant throughout the early summer. It is a sluggish insect during the day, but about sunset it descends from the trees and flies about the herbage. Its habits are very similar to those of *Thecla quercus*, to which it is nearly allied.

Zephyrus Sylæ, Koll.—Abundant in nearly every ravine near Kalabagh, where there is water and profuse undergrowth. It flies in June, and frequently flies down from the bushes on to sticks and stones in mid-stream, where it is somewhat difficult to capture. The snow lay very late this year, but this did not seem to affect *Z. Sylæ*, which flew merrily over it, and frequently settled on the snow slopes, which proved very disconcerting to the enthusiastic collector, as they occasionally gave way, and gently carried him with them, until they deposited him carefully in a mountain stream of ice-cold muddy water.

Chrysophanus Phlæas, L.—Common in the hills and at Abbottabad. I collected numerous specimens, but found little variation, the males being all very dark smoky-copper-colour, and the females approaching the European form. This is another instance of females being less affected by climate. *C. Kasyapa*, Moore.—Found in the same localities at the same season, and quite as commonly as *Z. Sylæ*.

Ilerda Sena, Koll.—Abundant in the autumn months between Baragali and Abbottabad. *I. Tamu*, Koll.—Very common in June, in the same localities as *C. Kasyapa* and *Z. Sylæ*. The deep blue of *I. Tamu*, and the brilliant copper and green of *C. Kasyapa* and *Z. Sylæ*, form a combination of colouring, which, when the insects are settled in some numbers together, is very difficult to beat. The larva of *I. Tamu* probably feeds on the wild strawberry, among which the perfect insects are more usually found. The insect appears to be scarce in collections, but it is probably quite common in the Galis. Major Yerbury some years ago found it equally plentiful.

**Deudorix epijarbas*, Moore.—Fairly plentiful. It is a pugnacious creature, and soon tatters itself.

Rapala Nissa, Koll.—Two specimens only at Kalabagh ; it is probably not uncommon.

I have been unable to name numerous specimens of *Papilionidæ* and *Hesperidæ*. Two large green *Papilios* occur and a large black one. *P. Machaon* is common in the hills and rare at Pindi, where *P. Erythronius* flies sparingly. *Terias Hecabe* is not uncommon. *Pieris brassicæ*, *rapæ*, and *napi*, or species very much resembling them, are plentiful everywhere. *P. Daplidice* is much more rare; I took one worn specimen at Pindi in April, and one at Kalabagh in June.

**Colias Fieldi*, Mén.—Swarms everywhere, both in Pindi and the hills; the spring brood at Pindi is smaller than the autumn one, which is very much more plentiful in individuals. The form *Helice* also occurs. It is abundant also at Abbottabad. **C. Hyale*, L.—Much less abundant than the former, but in the same localities. There are two forms of the male: one, perhaps, less plentiful than the other, has the black marginal band as in *Edusa*, the other is the form found in England. Gradations between the two occur. The female is much rarer than the male.

**Gonepteryx rhamni*, L.—This is a very common insect, especially before and after the rains. A form occurs which has the primaries coloured as in the male, and the secondaries like the female. It is probably a gynandromorph, though not having a specimen, I am unable to decide. I have only seen two; one was flying over a precipice down which no mortal would venture, the other afforded a long and exciting chase, which finally concluded by the gynandromorph flying in desperation into the middle of a thick bush, and the andromorph disappearing down a steep bank into a still thicker one. There is an excitement about collecting in these hills which is entirely wanting in the plains.

Since writing the above I have taken *Euplœa Core*, Cram., at Pindi.

Rawal Pindi:

December 1st, 1891.

Capture of Notodonta bicolora in Devonshire.—I have been fortunate enough within the last few days to have given me a specimen of *N. bicolora* by a collector in this neighbourhood, who took it in some woods near Exeter in 1880. He has no longer time to devote to his favourite pursuit, and was afraid that the specimen would be lost sight of. He told me that he, with his brother, worked the woods near Exeter frequently, both with sugar and light, about that time, and that the moth in question was taken by himself, but supposed to be *N. cucullina*, and that he reported the capture at the Exeter Museum, but under the latter name. He is a most respectable man, and I have no doubt of the correctness of his statement. The whole of his collection is set in the same manner with the same kind of pins; he never had any insects given him, nor did he ever exchange. As for dealers, he was perfectly ignorant of their existence. I have sent the specimen for exhibition at the Meeting of the Entomological Society.—J. N. STILL, Seaton: April 6th, 1892.

[Major Still has submitted the specimen to me for confirmation. It is undoubtedly *N. bicolora* in very fair condition, and, in my opinion, genuinely British. It is highly satisfactory to hear of a new locality for an insect so exceedingly rare with us, and especially as Devonshire might seem to be fully within the probable range of the species.—C. G. B.].

Early appearance of Anthocharis cardamines.—On April 4th while driving near Hedgemead Park in this town, I saw a male specimen of the above species; it flew from the direction of the Park across the street, and disappeared over the houses at the opposite side. I see that in my friend Mr. Barrett's new work the 17th of this month is mentioned as a very early date for its appearance. Of course the wonderfully warm and beautiful weather that we have had for several weeks is quite sufficient to account for so early an emergence from the pupa state.—WILLIAM W. FLEMING, Southfield, Claremont Road, Bath: April 13th, 1892.

Late sugaring in the Lincoln district.—The autumn species of *Macro-Lepidoptera* were unusually abundant with us last year, and extended their period of flight well into December. Our sugar first attracted them on October 20th in Hartsholme Wood, near Lincoln, when *Calocampa vetusta* was taken, with a few *Cerastis vaccinii*. My friend, Mr. E. Mead, and self again paid Hartsholme a visit on the following evening, and took off our sugar one specimen of *Calocampa exoleta*, two of *Phlogophora meticulosa*, four of *Anchocelis pistacina*, six of *Scopelosoma satellitia*, and about thirty specimens of *C. vaccinii*, with half a dozen of the variety *spadicea*, all in the pink of condition. On the 24th we obtained six *C. exoleta*, and saw an increasing number of *S. satellitia* and *C. vaccinii*, the only three species flying. On the 27th we again took six *C. exoleta*, two *Miselia oxyacanthæ*, while *satellitia* and *vaccinii* were as abundant as before. November 2nd, saw these insects in the greatest numbers; my memorandum of the weather is as follows:—Wind, N.E., but mild and somewhat close, a strong disposition towards rain, which, however, kept off, except for a few minutes about 5.30. I reached Hartsholme about 3.30, and sugared on old places in wood, then extended my journey to another wood about a mile further; while still light I sugared about a score places on trees and palings, and at 5 o'clock, while barely dusk, began my return journey. On the last tree sugared I found but one *A. pistacina*, but the next tree had nearly a dozen moths upon it, and as I advanced through the wood moths began literally to swarm; it was now quite dark, and *C. vaccinii* and *S. satellitia* covered every available drop of sugar, the lantern showed them coming from all directions by dozens, hustling and pushing each other for the coveted sweets; it was such a sight as I had never before witnessed, and had I so wished, could have collected hundreds of moths in a few minutes. On some of the trees *S. satellitia* alone were feeding, the smaller *C. vaccinii* being seemingly overpowered and driven away. These two species comprise the great bulk of the insects seen, but the two "Quakers," *Orthosia lota* and *macilenta*, were also strongly represented. I now continued my walk homewards, picking off the sugar such moths as I wanted, and reaching Hartsholme, found the same profusion of insects there as in the wood just left, but as the species were the same, did not disturb them. The full list for this night was as follows:—*C. exoleta*, *P. meticulosa*, *M. oxyacanthæ*, *S. satellitia*, *C. vaccinii* and var. *spadicea*, *A. pistacina*, *O. lota* and *macilenta*.

From this date the numbers began somewhat to decrease, though on the 9th, 16th and 18th of November great numbers of the commoner species were flying; on December 2nd our take was only three *exoleta* and about a score of commoner things, while on the 9th a few *vaccinii* alone were seen; soon after this date frost set in, and our sugaring expeditions for 1891 were over.—W. D. CARR, Foss Lodge, Lincoln: March, 1892.

March 16th, 1892.—The weather on this date being a complete change from the snow and ice of the last fortnight, and the first evening for sixteen without frost, I recommenced sugaring on trees from which so many insects were obtained last autumn, and was very interested in finding them again on flight, the sugar attracting about a score of *S. satellitia* and half that number of “chestnuts;” nothing else was seen. A thorough search on tree trunks and palings failed to reveal *Cymatophora flavicornis*, but a pair were taken this morning *in cop.*, clearly the first of the season; of *Hybernia leucophæaria* I obtained six males, and one male *Phigalia pilosaria*. Nearly a fortnight ago on a sunny afternoon I collected about half a dozen of the hibernated larvæ of *Anaitis plagiata*, feeding on the very young leaves of the St. John’s wort.—ID.: *March 17th.*

Coleoptera in the North of Ireland.—In October last I took a great number of *Pselaphi* in flood rubbish from Mullinure. Most were, of course, *P. Heisei*, but one or two secured were different, and on examination appeared to be *P. dresdensis*. I sent specimens to Canon Fowler, who confirmed my determination of the species. I obtained specimens from Loughnashade and Drummanmore lake as well as from Mullinure; these were in moss, and altogether I obtained about a dozen. I hope to get more, and to be able to supply any of my friends who need the species. In the same flood rubbish which produced *P. dresdensis* I took *Trechus micros*, but only a single specimen. Last May I took *Bradycellus harpalinus*, beside a little stream near Newtown Hamilton. *Agabus biguttatus* occurred in the drains in Mullinure, and in flood rubbish in the same place in April a single specimen of *Hydrana angustata* turned up. On January 20th I was at Holywood, Co. Down, for a couple of days, and, in spite of the snow which still remained in many places, I got a good many beetles, chiefly in moss; the most interesting was *Homalota ægra*, although I am not altogether certain as to the correctness of my determination, as I have no type of this species. By sweeping *Persicaria* and other plants on the edge of a small pond in the townland adjoining Mullinure I took *Scirtes orbicularis*, but very few. *Longitarsus pellucidus* must be added to my list of *Coleoptera* taken at Bundora in August, 1890 (*vide* Ent. Mo. Mag., sec. ser., vol. ii, p. 75). *Liosoma troglodytes* occurred in moss got near Newtown Hamilton in March, 1891. *Anthonomus comari* I took in Mullinure by sweeping in April and August, and near Newtown Hamilton in May; this last locality is at a considerable elevation above Armagh, the highest point being 1178 feet above sea level, while the highest point here is 239 feet, and Mullinure about 105 feet above sea level. *Phytobius canaliculatus* I found in moss gathered on the edge of Lowry’s Lough in April, and *P. comari* I took by sweeping at Coney Island, Lough Neagh, in June. I cannot find previous records of any of the above from Ireland. *Bembidium Doris* occurs pretty freely here, and I must have often passed it over in mistake for *B. Clarki*. I was very pleased to obtain *Chrysomela hyperici* in July last on *Hypericum perforatum*. I found it often hard to distinguish the beetle from the large seed vessels of the plant. The severe weather has prevented me from using my moss bag as much as usual, but I hope, with the return of spring, to remind the beetles that I am still here.—W. F. JOHNSON, Winder Terrace, Armagh: *March 2nd, 1892.*

[The species of *Pselaphus* above alluded to is certainly not *Heisei*, and at first I thought it might be a species new to Britain; after a careful examination, however,

I have little doubt but that it must be referred to *P. dresdensis*, although it does not entirely agree with my single specimen of that species, which was taken by the late Archdeacon Hey at Askham Bog, near York ; there is however, a very slight difference between them, which may partially be accounted for by the setting.—W. W. F.]

Myrmica ruginodis making war on its own species.—Rambling near the border of Dartmoor, a few miles from Plymouth, on the 10th instant, I caught sight of *Myrmica ruginodis* carrying something that I could not at first well define ; standing quietly a few moments I saw many others loaded in the same manner. I captured one, and, to my surprise, I found it was another of the same species it was carrying. I have no doubt a raid had been made on a smaller colony, and the victorious party were conveying them off to strengthen their home. The prisoner was grasped by the throat, the abdomen turned over on the top of the head of the carrier. I have several times seen *Formica rufa* at the same business ; this is the first time I have witnessed it with *ruginodis*.—G. C. BIGNELL, Stonehouse : April 13th, 1892.

Early Hymenoptera and Hemiptera.—After a long and dreary winter, which seemed as though it would never come to an end, we have spring burst upon us in all its glory. A fortnight ago the snow was not only lying on the ground but was falling heavily, and everything looked dismal in the extreme. To-day the hedges are green, except along the road sides, where they are white with dust, the fruit trees are in blossom, and the sunshine brilliant. The fine weather commenced here with the present month, and has continued so uninterruptedly to the present date. The heat at times has been greatly above the average, and has brought out both animal and vegetable life very rapidly. On the 8th instant I walked to the Old Camp in Westridge Wood, and on the earthworks I found *Osmia bicolor* already making its nest, and also the rarer *Osmia pilicornis* occupied in the same way ; the former insect was abundant, but many were small, not more than half the average size ; the males, as usual, were much scarcer than the females, and they fly very close to the ground. Small *Halicti* were seen every now and then. *Anthophora acervorum* excessively abundant, quite a pest, and the following *Bombi* I noted down : *muscorum*, *hortorum* (1), *subterraneus*, *pratorum*, *sylvarum* (several, very early for this bee), *lapidarius*, and both forms of *terrestris*. On the 9th I added *P. quadricolor* to this list. The males of the common early *Andrenidæ* were flying along the hedges, and *Melecta punctata* over the newly dug ground in the gardens. I also captured specimens of the following *Hemiptera* : *Corimelæna scarabeoides*, *Calyptonotus pini*, *Trapezonotus agrestis*, and *Drymus brunneus*.—V. R. PERKINS, Wotton-under-Edge : April 11th, 1892.

Hylemyia nigrescens, Rnd., destructive to Carnations and Picotees.—Late last year a firm of London nurserymen brought under my notice young plants of Carnations and Picotees which were being damaged or destroyed by grubs of a Dipteron evidently belonging to the *Anthomyiidæ*. They lived beneath the rosette of leaves forming the crown of the plant, and also bored into the stem below the crown, in some instances causing the crown to drop off. It was impossible to determine the species without seeing the perfect insect. At the Meeting of the Scientific Committee of the Royal Horticultural Society on Tuesday last, another firm of nursery-

men sent one of the perfect insects, stating that the damage occasioned had been very great this season. Mr. Meade has kindly identified the insect as *Hylemyia nigrescens*, Rnd., and says it is nearly allied to *H. cardui*, which feeds in the flower heads of thistles.—R. McLACHLAN, Lewisham: April 14th, 1892.

Coccidæ in Jamaica.—The Institute of Jamaica has issued a Circular Notice that it has ready for distribution, at a nominal price, sets of *Coccidæ* prepared by Mr. T. D. A. Cockerell, the Curator of the Museum. "It is hoped that they will be of service not only to students, but also to horticulturists and those interested in agriculture in tropical countries, who often have to contend with scale-insects which they rarely have the means of identifying;" and we trust that this effort in economic entomology may have the success that it merits.—EDS.

Societies.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: February 17th, 1892.—A Meeting of six old Members of the Society was held at Mr. Jones', 59, Trumpington Street, to discuss the possibility of setting the Society going again, the last Meeting having been held March 8th, 1889. The advisability of altering some of the existing rules was discussed, one item being the changing the name of the Society from "The Cambridge Entomological Society" to "The Cambridge Entomological and Natural History Society." As several Members of the University were desirous of joining, and the Anniversary Meeting had always been held in February, it was decided that the next Meeting should be the Anniversary Meeting.

February 26th.—ANNIVERSARY MEETING.—Mr. G. H. BRYAN, M.A., President, in the Chair.

In the absence of Mr. Theobald, Mr. Farren acted as Secretary. Messrs. A. M. Moss, A. Rashleigh, H. S. Fitzroy, W. Morrow, C. Woodhouse, M. White, C. Wells, W. H. Powell, H. T. P. Smith, W. C. Feetham, H. Eltringham, R. Ll. Hodgson, A. S. Shrubbs, and G. Watkinson were elected Members.

The proposed alterations in the rules having been made, the officers for the ensuing year were elected as follows:—President, Mr. A. M. Moss; Vice-President, Mr. G. H. Bryan, M.A.; Hon. Secretary and Treasurer, Mr. W. Farren, F.E.S.; Hon. Librarian, Mr. A. Jones; and as other Members of Council, Messrs. C. Woodhouse, C. Wells, and H. Eltringham.

March 11th.—Mr. A. M. Moss, President, in the Chair.

Messrs. W. G. S. Malim, H. C. T. Langdon, and H. V. Ball were elected Members.

Mr. F. V. Theobald, F.E.S., sent for exhibition two cases of *Diptera*: one showing the life-history of the "daddy long-legs" (*Tipula*), *T. oleracea*, *T. gigantea*, and *T. lutescens*; and the other being a case of *Tabanus bovinus* and *T. asilus*; also a box of living specimens of "the corn and rice weevils," *Calandra granaria* and *C. oryzae*. The Secretary read some notes on the exhibit by Mr. Theobald. Mr. Farren exhibited a long series of *Noctua festiva*, with a row of the small Scotch forms, erroneously described by Newman as *conflua*, and, for comparison, some of

the true var. *conflua* from Shetland; a series of *Spilosoma mendica*, including some of the peculiar Irish forms, and a lot of specimens, descendants of Mr. Porritt's celebrated Huddersfield ones; the exhibition box of No. 3 basket of the "Record Exchange Club," which contained *Noctua festiva* and var. *conflua*, a most remarkable variety of *Tæniocampa gothica*, and some micros. Mr. Jones read a paper on "Killing and Setting *Lepidoptera*," a discussion ensued chiefly on the several methods of killing: Mr. Jones and Mr. Farren strongly recommending the use of ammonia in preference to cyanide. A vote of thanks to Mr. Jones for his paper concluded the Meeting.—WM. FARREN, *Hon. Secretary and Treasurer*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: April 11th, 1892.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Messrs. W. Webster, of St Helen, C. F. Johnson, of Stockport, and the Rev. C. J. Buckmaster, of Wigan, were elected Members.

Mr. J. E. Robson, F.E.S., of Hartlepool, editor of the "British Naturalist," read a paper, entitled, "Melanism: and its theories;" the paper was illustrated by numerous examples of melanic forms of *Lepidoptera* and *Coleoptera*. Mr. C. A. Briggs, very dark *Sphinx ligustri*, the President, black *Boarmia cinctaria* and *B. roboraria*, and Mr. Robson, very dark *Arctia menthastri*, *Odontopera bidentata*, and *Chortobius Pamphilus* being specially fine. Mr. Newstead exhibited types of *Prosopophora dendrobii*, Doug. (of MS. only), a very remarkable *Coccid* from Demerara, description of which will shortly appear in this Magazine. Mr. Collins, on behalf of Messrs. T. R. Billups and J. Dutton, of Warrington, ♂ and ♀ of *Dytiscus dimidiatus*, captured in the fens, 1891, after being lost sight of for eight years, and *Silpha atrata*, var. *subrotundata*, from the east and south-west coast of the Isle of Man, February, 1892.—F. N. PIERCE, *Hon. Secretary*, 143, Smithdown Lane, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: March 24th, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. J. R. Burt, of Streatham, was elected a Member.

Mr. F. Merrifield exhibited examples of *Selenia illustraria*, *S. illunaria*, *S. lunaria*, *Vanessa urticæ*, *Platypteryx falcata*, *Chelonia Caia*, *Bombyx quercus*, and var. *callunæ*, to illustrate the effects of temperature on these species. Mr. Merrifield prefaced his remarks on the experiments he had made by referring to those of Weismann and Edwards, which were made on seasonally dimorphic species, he said the results obtained by him were consistent with those of these gentlemen; but he went further than they did, and he found by subjecting the pupæ to certain temperatures he invariably, in the majority of the specimens, obtained certain results, a lower temperature generally producing examples which were darker and more intense in colour than those subjected to higher temperatures. In *illustraria*, a brood divided into two portions, and one, placed at a temperature of about 80°, produced normal specimens, while the other portion, placed at a temperature of from 50° to 60°, were strikingly darker in colour; the same results were obtained with *illunaria* and *lunaria*, and *E. autumnaria*, but in the last named species they were not quite so pronounced. *P. falcata*, *B. quercus*, its var. *callunæ*, *C. Caia*, and *V. urticæ*, were similarly affected, but in a lesser degree than with the species of *Selenia*; in *V. urticæ* some of the examples closely approached the var. *polaris*, the

specimens subjected to the lower temperatures being generally darker, and the blue crescents were more intense in colour. In conclusion, Mr. Merrifield said a temperature of 47° seemed to stunt the size, and produced a large proportion of cripples, and higher temperatures than this seemed more conducive to health and vigour; it had been suggested that the results he had obtained were attributable to the unhealthy conditions to which the pupæ were exposed, but this was not at all a correct explanation, in the 172 specimens he exhibited 150 were not cripples, extreme temperatures produced crippling, but moderate temperatures were quite sufficient to account for the extreme difference of colouring. Mr. Fenn said he had since 1859 paid great attention to the earlier stages of *Lepidoptera*, and he assumed that variation was either natural or artificial; natural variation might be again divided into three nearly equal causes, viz., heredity, moisture, and natural selection; in artificial variation the causes might generally be said to be abnormal or diseased, by the term disease he meant a general weakening of the constitution by unnatural influences; the least deviation from natural conditions might lead to variation. *E. autumnaria*, one of the species relied on, Mr. Fenn had had considerable experience in breeding, and in the series he exhibited there were many paler and many darker than any shown by Mr. Merrifield, and the larvæ and pupæ had been kept under usual conditions, and the greater proportion of them followed the parent forms. In conclusion, he said that such variation as was shown by Mr. Merrifield was practically impossible in a state of nature, unless it was the result of disease. Messrs. Weir, Adkin, Tugwell, Carrington, Dobson, Barrett, and Tutt continued the discussion, the last named gentleman following Mr. Fenn in attributing the variation to disease, and that to a large extent it was caused by preventing the proper development and formation of the colouring pigment; he thought the action of temperature was indirect, and produced variation by interfering with the normal development. Mr. Merrifield agreed with many of Mr. Fenn's observations, and thought most of them were consistent with the results obtained in his experiments as reported by him; in any case, there could be no doubt that in the species principally operated on by him temperature applied in such moderation as not to affect the healthy appearance of the insect produced with great uniformity conspicuous differences in colouring. There were other species in which no considerable effect was produced, unless the temperature was so extreme as to cause a certain amount of crippling or imperfect development. The Meeting closed with a vote of thanks to Mr. Merrifield, proposed by Mr. Fenn and seconded by Mr. Jenner Weir.

April 14th, 1892.—The President in the Chair.

Mr. R. South exhibited *Arctia Caia*, L., and read notes on the variation in this species. Mr. C. G. Barrett, long series of *Noctua festiva*, Hb., from all parts of the British Isles, and expressed an opinion that the so-called Scotch *N. conflua* was a form of *N. festiva*. Mr. R. Adkin and Mr. Tugwell likewise exhibited this species, and a discussion ensued as to the identity of *festiva* with *conflua*. Mr. Barrett also exhibited a specimen of *Notodonta bicolor*, Hb., belonging to Major Still, and taken in Devonshire, as well as varieties of *Rhopalocera* from Mr. Sydney Webb's collection. Mr. R. Adkin, *Phibalapteryx lapidata*, Hb., and *P. vittata*, Bork., and contributed notes. Mr. Lewcock, varieties of *Silpha atrata*, from English, Scotch and Irish localities, and made some observations thereon.—H. W. BARKER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *March 23rd*, 1892. — Dr. DAVID SHARP, M.A., F.R.S., Vice-President, in the Chair.

The Hon. Mrs. W. Carpenter, of Kiplin, Northallerton, Yorkshire, and Mr. S. G. C. Russell, of 19, Lombard Street, E.C., were elected Fellows of the Society.

The Secretary read a letter from the City of London Entomological and Natural History Society on the subject of a proposed Catalogue of the Fauna of the London District.

Mr. G. C. Champion exhibited a number of new species of *Longicornia* from Mexico and Central America, recently described by the late Mr. H. W. Bates in his paper, entitled, "Additions to the *Longicornia* of Mexico and Central America, with remarks on some previously recorded species," read at the last Meeting of the Society.

Mr. S. Stevens exhibited three very rare species of *Noctuæ*, viz., *Noctua flammatra*, *Leucania vitellina*, and *Laphygma exigua*, all taken by Mr. H. Rogers, at Freshwater, Isle of Wight, in the autumn of 1891.

Mr. F. C. Adams again exhibited the specimen of *Telephorus rusticus*, in which the left mesothoracic leg consisted of three distinct femora, tibiæ, and tarsi, originating from a single coxa, which he had shown at the Meeting on the 24th February last. The specimen was now reversed, to show the structural peculiarities, upon which Dr. Sharp, Mr. Champion, and Mr. Jacoby made some remarks.

Mr. Osbert Salvin exhibited a series of mounted specimens of the clasping organs in the male of several species of *Hesperidæ*.

Dr. Sharp exhibited, for Mr. F. D. Godman, a collection of *Orthoptera*, recently made in the Island of St. Vincent, West Indies, by Mr. H. H. Smith, the naturalist sent to that Island by Mr. Godman in connection with the operations of the Committee appointed by the British Association and the Royal Society for the investigation of the Fauna and Flora of the Lesser Antilles. It was stated that the collection had recently been referred to, and reported on by, Herr C. Brunner von Wattenwyl and Professor J. Redtenbacher.

Mr. J. W. Tutt exhibited and remarked on a series of various forms of *Orrhodia vaccinii* and *O. (spadicea) ligula*.

Mr. C. G. Barrett exhibited and made remarks on a series of specimens—including some remarkable varieties—of *Bombyx quercus* and *Odonestis potatoaria*. A long discussion ensued as to the probable causes of the variation exemplified, in which Mr. Tutt, Mr. E. B. Poulton, Mr. Jacoby, Mr. Salvin, Mr. Bethune-Baker, Dr. Sharp, and Mr. Distant took part.

Mr. G. A. James Rothney sent for exhibition a number of specimens of *Camponotus compressus*, *C. micans*, *Ecophylla smaragdina*, *Sima rufo-nigra*, *Solenopsis geminata*, var. *armata*, and other species of Ants, from Calcutta, together with certain species of *Aphidæ* kept by them for domestic purposes; also certain of their enemies and parasites. He also communicated a short paper on the subject, entitled, "Notes on certain species of Calcutta Ants and their habits of life."

April 13th, 1892.—HENRY JOHN ELWES, Esq., F.L.S., Vice-President, in the Chair.

Mr. Francis Jaffrey, M.R.C.S., of 8, Queen's Ride, Barnes, S.W., was elected a Fellow of the Society.

Mr. R. McLachlan exhibited specimens of *Anomalopteryx Chauviniana*, Stein, a caddis-fly remarkable for the abbreviated wings of the male, the female having fully developed wings; he alluded to the *Perlida* as including species in which the males were frequently semi-apterous. Dr. Sharp enquired if Mr. McLachlan was aware of any Order of insects, except the *Neuroptera*, in which the organs of flight were less developed in the male than in the female. Mr. C. G. Barrett and Mr. H. J. Elwes cited instances amongst the *Bombycida* in which the wings of the male were inferior in size and development to those of the female.

Dr. Sharp exhibited specimens of both sexes of an apparently nondescript phasmid insect allied to *Orobia*, obtained by Mr. J. J. Lister in the Seychelles Islands, together with *Phyllium gelonius*. He also exhibited specimens of both sexes of an Acridiid insect, of the group *Proscopides*, remarkable for its great general resemblance to the *Phasmida*, though without resemblance, so far as is known, to any particular species. In reference to the *Phyllium*, Dr. Sharp called attention to the fact that the similarity of appearance of parts of their organization to portions of the vegetable kingdom was accompanied by a similarity, amounting almost to identity, of minute structure. He said that it had been stated that the colouring-matter is indistinguishable from chlorophyll, and that Mr. Lister had informed him that when in want of food a specimen of the *Phyllium* would eat portions of the foliaceous expansions of its fellows, although the *Phasmida* are phytophagous insects. The resemblance to vegetable products reached its maximum of development in the egg; and Mons. Henneguy had observed that when sections of the external envelope of the egg of *Phyllium* are placed under the microscope no competent botanist would hesitate to pronounce them to belong to the vegetable kingdom. Dr. Sharp also stated that in some species of *Phasmida* it was easy to obtain the egg by extraction from a dried specimen.

Mr. Barrett exhibited, for Major J. N. Still, a specimen of *Notodonta bicolora*, which had been captured in a wood near Exeter. Major Still had stated that the captor of the specimen was unaware of the great rarity of the species. Mr. Barrett also exhibited, for Mr. Sydney Webb, some remarkable varieties of *Argynnis Adippe* and *Cænonympha Pamphilus*; also two specimens of *Apatura Iris*, and two of *Limenitis Sybilla* in which the white bands were entirely absent.

The Hon. Walter Rothschild exhibited, and contributed preliminary notes on, some hundreds of *Lepidoptera*, representative of a collection of some 5000 specimens recently made in five weeks, by Mr. W. Doherty, in the south-west of Celebes. Many of the species were new, and others very rare. Mr. Elwes, Colonel Swinhoe, and Mr. S. Stevens commented on the interesting nature of this collection, and a vote of thanks to Mr. Rothschild for exhibiting it was passed by the Meeting.

Mr. E. B. Poulton gave a lecture, "On the denudation of the Scales in certain Species of *Lepidoptera*," and illustrated it by a large number of photographs shown by means of the oxy-hydrogen lantern. Mr. G. F. Hampson, Mr. Elwes, and Mr. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.



ON NEW OR LITTLE KNOWN COCCIDÆ, CHIEFLY ENGLISH (No. 2).

BY R. NEWSTEAD, F.E.S.,
CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

PLATE II.

LECANIUM MINIMUM, *n. sp.*

♀ adult. Yellowish-brown, flat, elongate, narrowly rounded in front; surface rugosely punctured, with a strong central carina commencing just behind the black eye-spots and terminating at the caudal scales. Dermis with a large and nearly circular tessellation. Margins with equidistant hairs, more numerous near the anal cleft. Caudal scales with four or five strong, short hairs. Antennæ (fig. 1) of seven joints, of which the 3rd, 4th and 7th are the longest, and in length nearly equal; the 5th and 6th shortest; 1st and 2nd half the length of the 3rd. Rostral filaments (loop) extending just beyond insertion of posterior legs. Legs (fig. 1a) rather short; tarsi very little shorter than tibiæ. Long, .75—2.50 mm.; wide, .25—1 mm.

This species, which lives on *Areca* and *Abutilon*, exactly resembles very young females of *Lecanium hesperidum*, but that it is not that species I am certain, as I have kept living examples under my observation on a growing plant for about twelve months, during which time several generations were produced, but none ever exceeded the measurement given above. The species is, therefore, clearly distinct, and, from its small size, cannot be confounded with any hitherto described. I was unable to discover a male, or ova, so the female is undoubtedly viviparous. This and the other characters given place it in Signoret's first series.

LECANIUM ASSIMILE, *n. sp.*

♀ adult. Long-oval, narrowed, and somewhat produced in front; dark red-brown, or piceous, more or less shiny; slightly gibbous in the middle, deeply and irregularly foveolate at the sides, forming irregular carinæ more prominent near the margin. Antennæ (fig. 2) of seven joints, of which the 3rd and 4th are the longest and in length equal; the 1st, 2nd and 7th shorter; 5th and 6th shortest. Legs (fig. 2a) long and slender; tarsi about half the length of the tibiæ; digitules to tarsi and claws slender. Long, 4—5.25 mm.; wide, 2—3.50 mm.

Larvæ: several were restored by boiling in potash, but they offered no salient distinctive characters.

Hab.: on *Grindelia hirsuta*. Received from Mr. Alfred O. Walker, Colwyn Bay, N. W.

This species evidently belongs to Signoret's second series, and is allied to *L. mori*, Sign., and *L. persicæ* (Essai, p. 237). It is like the former in the form of the scale and antennæ; but differs in the length of the tarsi, and in not having the "grooved legs" described by Signoret. It is at once separated from the latter, which has eight joints to the antennæ. Described from five females.

On receiving the specimens I concluded they had been imported with the plant, and at once wrote Mr. Walker for information, who kindly replied as follows:—"I expect the *Grindelia hirsuta* is a native of Mexico or thereabouts, but as the plant was raised from seed in this country, and has been on my rockery for several years, I don't think its native country is of any importance." It is probable, therefore, that the species is indigenous; if not, it must have escaped from other imported plants where the seedlings were raised.

PULVINARIA PERSICÆ, n. sp.

♀ adult, immediately prior to gestation; red-brown, thickly set with small, confluent, blackish spots, and partly covered with short, white, woolly filaments, cordate, narrowed in front to an obtuse point, widely rounded behind; anal emargination shallow; anal cleft deep, but completely closed, the margins forming a narrow but well defined carina; caudal scales very small, and much porrected; surface flat-convex, rugose at the sides. After gestation the scales become tilted and so wrinkled to defy description. Antennæ (fig. 3) of eight joints, of which the 3rd and 4th are the longest, and in length nearly equal. Legs (fig. 3a) strong; coxa and trochanter each with a very long hair; tarsus about half the length of the tibia, the latter with several long hairs at apex. Digitules of the claw very stout, and unequal. Rostrum short; arising almost on a level with the insertion of the anterior legs, and is a little more than twice as long as the antennæ. Dermis with numerous large oval and round cells. Margins with many stiff spines arranged wide apart, except over the respiratory channels, where there are three much larger ones, blunt, and one of them more than twice as long as the others (fig. 3b).

Long, 5—6·25 mm.; wide, 4—5·25 mm. The old shrivelled specimens are generally as broad as long.

Allied to *P. vitis*, of authors, but differs in the form of the claws and the digitules. In *P. vitis* the latter are much more slender, and the claw is toothed (Signoret, Essai, p. 221, pl. x, fig. 1a). The antennæ also differ in not having the unusually long hairs figured by Signoret (*l. c.*) on joints 4 and 8. It is readily distinguished from *P. tremulæ*, Sign. (Essai, p. 221), in having the rostral filaments much shorter, and in the form of the antennæ.

Hab.: on peach trees under glass. Received from Mr. Gelanders, High Legh, Knutsford, Cheshire, who says they are very abundant.

SIGNORETIA LUZULÆ.

Aspidiotus? luzulæ, L. Dufour, Ann. Soc. Ent. Fr., 3 Ser. iv, p. 208, pl. 5, fig. 4.

Signoretia luzulæ, Signoret, Essai, p. 181, pl. vi, figs. 1, a, b, c.

(*Signoretia clypeata*, Targioni-Tozzetti, Cat., p. 34).

♂. Coral-red or dull red, scutellum darker; eyes and ocelli black; antennæ, legs and stylus paler; wings narrow, nearly as long again as the body, and are of a

clear white; head cordate, apex in front with several very short hairs. Antennæ (fig. 4) of ten joints, of which the 2nd is the shortest, and is furnished at the base beneath with two very short, blunt, angular spines directed backwards (fig. 4a), all the joints with many fine hairs, the last joint has three clubbed hairs at the apex. Legs slender, with fine short hairs; the tarsi a little more than one-fourth the length of the tibiæ; there are four ordinary digitules, two on the tarsi and two on the claws. Abdomen with the last three segments furnished at the sides with two tubercles, bearing short, stiff hairs, those on the last segment longest. Thorax with a few fine scattered hairs, and a row of hairs arranged wide apart on the apical margins of the abdominal segments. Long, 1 mm.

Scale of the ♂ glassy-white, something like those of the *Lecania*, but differs from them in having the margins bevelled inwardly from above, and there is no anal cleft. Long, 1.25 mm.; wide, .75 mm.

♀ at period of fecundation very elongate, sides parallel, ends equally rounded, pale, or dark orange-yellow, with two broad subdorsal lines of a rich dark carmine, thickly set with small spots of the ground-colour. Dermis with many fine longish hairs, more numerous on the margin. Antennæ as in the adult. Legs with few hairs; trochanter with one very long one; tarsi two-thirds the length of the tibiæ, the latter with one very long hair at the apex; digitules of the tarsi long and slender, those of the claw very broad throughout their length, and much dilated at their extremities. Rostrum without articulation; its entire length, including the unexpanded filaments, scarcely exceeds the length of the femur. Anal ring with six slender hairs. Long, 2.50—3.25 mm.; wide, .75—1 mm.

The description of the adult female and the sac, as given by Signoret (*l. c.*), agrees in almost every particular with my specimens, except that he shows in his figure of the antennæ the 4th and 5th joints the longest. I find in all my examples that the 3rd, 4th and 5th are the longest; the other joints and the arrangement of the hairs are as shown in his figure.

Signoret states that he examined ichneumonized individuals, which will at once account for the slight discrepancy in the relative length of the joints of the antennæ.

I find parasitized Coccids frequently have their appendages, &c., malformed. As a proof that Signoret examined parasitized examples, he remarks that "the sac is open at one end, but at this place the body of the female closes it." Now, the habit of the female after gestation is to drop from the sac, and perish outside. Of the many hundreds of examples examined, I never found other than parasitized individuals to remain in the sac; which are very rare instances, indeed, in this locality. The females cast their skins prior to gestation, and to effect the removal of the same from the anal cleft, I saw one example make free use of its anal ring, which it constantly protruded in order to remove the skin. The females are active up to the time they secrete

their sacs, and if placed upon their backs they readily right themselves by bringing their extremities together. The long white sacs are constructed in from 12 to 16 days; the cephalic portion of their bodies remains uncovered throughout the process.

The males were obtained, after many failures, by rearing them on the living plants of the *Luzula*. In their early stages they are very like the females, but the subdorsal lines are wanting. When about to pupate they generally leave the upper-sides of the leaves and seek shelter beneath them, where they construct their glassy scales, and escape in the perfect form in a few days; this takes place from the beginning of July.

The male is now described for the first time, and the species is an addition to our fauna. Abundant on a moist railway embankment on the "Field wood-rush" (*Luzula campestris*) at Ince, Cheshire, 1890—91.

PSEUDOCOCCUS SOCIUS, *n. sp.*

Pulvinaria ribesiae, Doug., ♂ only, Ent. Mo. Mag., 2nd Ser., vol. i, p. 240, fig. 3.

♀ immediately prior to fecundation. Ovate, narrowed behind, dusky yellow or greenish-yellow, covered with a white mealy powder; margins all round with white waxy projections, two at the anal extremity longest; eyes considerably behind the antennæ, shining black. Antennæ of seven joints, of which the 7th is the longest, then the 2nd, the others shorter and in length equal; all with fine short hairs, except the 7th, which has three or four long stiff ones. Legs short, thinly set with short hairs; tarsi a little shorter than the tibiæ.

Long, 1·50—2 mm.; wide, 1—1·25 mm.

♀ adult. Colour and shape as above. Antennæ (fig. 5) of nine joints, of which the 2nd and 3rd are the longest; 1st, 4th, 5th, 6th, 7th and 8th in length nearly equal, the 9th slightly longer than and these, together with the 8th, is wider than the rest, all with fine hairs. Legs (fig. 5a) long and slender, especially the posterior pair, with fine hairs, tibiæ as long again as the tarsi; coxa with one long one; claws (fig. 5b) with a strong tooth and a bulbous base; digitules to claw only; rostrum half as long again as the antennæ.

I cannot give the exact measurements, as my specimens became twisted in the preparation, but they are not less than 3 mm. long. Ovisac is composed of a thin and extremely brittle material, so much so, that I have been unable to obtain a single perfect example.

♂. Pale brown, mealy; head rounded in front; eyes and ocelli shining red-brown. Antennæ (fig. 5c) reproduced, of ten joints. Legs thinly set with short hairs; tarsi a little more than one-third the length of the tibiæ; wings white, reaching beyond abdomen; last abdominal segment with two long and two short white filaments, the latter not reaching beyond the closed wings. Long, 1·25 mm.

Sac of the ♂ long-oval, convex, composed of a thick, white, cottony substance.

Long, 2 mm.

Hab.: on black currant, in company with *Pulvinaria ribesiæ*, Sign., at Wakefield, Yorks. Received from Mr. Geo. Parkin.

I discovered the male sacs on some black currant twigs infested with the females of *Pulvinaria ribesiæ*, and as the males of this latter were unknown, I at once concluded that they belonged to this species; hence the reason for Mr. Douglas having described them as such (*l. c.*). On receiving a second batch of infested shoots I was surprised to find, in addition to numerous specimens of *P. ribesiæ*, male and female specimens of the *Pseudococcus* here described; these I had the pleasure of seeing paired, which at once decided as to which genus the male belonged.

Before the males emerge they burst off a small portion of the sac at the anal extremity, after this the long filaments and the wings protrude before they finally escape. The first male hatched on the 7th of April, pairing taking place almost immediately after. The time which the insects under observation remained together varied from 10 to 35 minutes. Re-pairing takes place, and in one instance a single male fertilized two females.

This species is a near ally of *Ps. mespili*, Sign. (Essai, p. 367), but differs in not having the last joint of the antennæ as long again as the preceding one, and in being of a greenish-yellow instead of a reddish colour, as stated by Signoret.

RIPERSIA PULVERARIA, *n. sp.*

♀ adult. Pale pink, very elongate, distinctly segmented; dermis with a few very fine spines and small spinnerets. Antennæ (figs. 7 and 7a) of six, sometimes seven, joints, in both the last joint is the longest; rostrum short, the loop extending to anterior legs; the extended filaments do not reach beyond intermediate legs. Legs (fig. 7b) short, with fine hairs; tarsi about half the length of the tibiæ; claws fine, with two extremely fine digitules; anal ring large, with six rather long stiff hairs; anal lobes obsolete. The female covers herself and eggs with a fine white powder, which is of such a dry nature, that on disturbing the female it almost entirely disappears from her body, some, however, remains on the food-plant.

Long, 1.50—2.25 mm.; wide, .50—1 mm.

Larva active, pale yellow, elongate-oval. Antennæ (fig. 7c) of six joints, of which the 6th is the longest, and equal in length to the first four; joints 1 to 5 in length nearly equal, all with fine short hairs; loop of rostrum reaching to intermediate legs. Legs short, with fine hairs; anal ring with six small hairs; anal lobes normal, each with a long hair.

Male unknown in any stage.

Hab.: on *Agrostis vulgaris*, at Sandiway, Cheshire, August, 1891.

This species inhabits the basal portions of the stems of the above grass, and the insects locate themselves between the stem and the leaf

sheath. The plants containing the insects did not present any external signs, such as swellings or decayed leaves; and the insects could only be found by pulling the plants asunder. Although so perfectly concealed, they were yet very badly infested with a Dipterous larva, so much so that I was unable to find but very few unparasitized individuals. Nearly all the specimens found occurred in isolated plants growing in warm, dry situations.

It is like *R. corynepthori*, Sign. (Essai, p. 369, pl. xvii, figs. 1 & 1a), in not constructing an ovisac, or having waxy appendages to its body. It differs, however, in the structure of the antennæ, form and colour. It cannot be confounded with any species hitherto described; its curious habitat is quite unique.

RIPERSIA TOMLINII, n. sp.

♀ adult. Dull orange-yellow, elongate-oval, slightly narrowed in front, convex above and below; this applies to the restored specimens only; the specimens when received were still living, but much shrivelled. Antennæ (fig. 6) of seven joints, of which the 3rd is the longest; the 2nd, 5th and 7th shorter; 4th and 6th shortest and equal; all with rather long hairs, basal joint with a very short spine; rostrum biarticulate, with equidistant hairs at apex; rostral filaments extending very little beyond insertion of anterior legs. Legs (fig. 6a) short, with many fine short hairs; coxa and trochanter each with a longer one; tibiæ half as long again as the tarsi, and furnished at the apex with two spines; tarsi without dilated digitules; claw with two slender digitules; anal ring with six long thick hairs, anal lobes nearly obsolete, each with one long and one short hair; extending inwards on the ventral surface are three or four short spines. Eyes (fig. 6b) in the form of a truncated cone.

Long, 2–3 mm.; wide, 1.25–2 mm.

Sac of the ♀ globose or ovate, composed of close, white, waxy material, very compact on the inside; one specimen is almost glassy, and much thinner than the others.

Elongate forms, 1.50–3 mm. long; wide, 1–2 mm.

Globular forms, about 3 mm. in diameter.

Larva pale orange-yellow, almost covered with meal, very elongate. Antennæ (fig. 6c) of six joints, of which the 6th is longer than the 1st and 2nd together; 3rd, 4th and 5th shortest and equal; all with short hairs; rostrum biarticulate, and furnished with hairs as in the female; rostral filaments extending beyond insertion of intermediate legs. Legs with fine hairs; two fine digitules to claw only; anal ring of six long hairs; anal lobes normal, and furnished with hairs as in the adult.

Ova pale yellow at first, become darker immediately prior to hatching.

Male unknown.

Hab.: on grass roots in ants' nests, Moulin Huet, Guernsey. September, 1891.

In every respect this species agrees with the genus *Ripersia*, excepting as to the number of joints to the antennæ, which should be six. Possibly the last joint is a "false joint;" it certainly has the

articulation very faint, and looks like a fused joint. Maskell states (Trans. Roy. Soc. S. Australia, 1888, p. 106) that *R. leptospermi*, Mask., has a false joint in the antennæ, so that I feel justified in placing this in the genus.

Quite recently Mr. Maskell has furnished me with specimens, and photographs of his *R. formicicola*, MS., which he has found inhabiting ants' nests in New Zealand, but this is a much smaller species, and differs in many important points, so far as I am able to judge from the specimens and photographs. The antennæ, curious eyes, and the sac are the distinctive characters in this species.

Received from Miss Tomlin, of Chester, who found a few specimens while hunting for *Coleoptera* in Guernsey. To her I have the honour of dedicating the species.

RIPERSIA FRAXINI, Newstead.

Eriococcus fraxini, Newstead, Ent. Mo. Mag., 2nd Ser., vol. ii, p. 165.

Mr. Maskell has kindly examined specimens of this species, and has written to me calling attention to the error on my part, and a further study has convinced me that the species described (*l. c.*) is undoubtedly referable to the genus *Ripersia*.

EXPLANATION OF PLATE II.

Lecanium minimum, ♀, fig. 1, antenna; 1a, leg.

„ *assimile*, ♀, fig. 2, antenna; 2a, leg.

Pulvinaria persicæ, ♀, fig. 3, antenna; 3a, leg (part only).

Signoretia luzulæ, ♂, fig. 4, antenna; 4a, ditto, first four joints.

Pseudococcus socius, ♀, fig. 5, antenna; 5a, leg; 5b, extremity of tarsus with claw.
♂, fig. 5c, antenna (reproduced).

Ripersia Tomlinii, ♀, fig. 6, antenna; 6a, leg; 6b, eye; 6c, antenna of larva.

„ *pulveraria*, ♀, figs. 7 and 7a, antenna; 7b, leg; 7c, antenna of larva.

ERRATA.

Page 144, line 16 from bottom, *for* “and these,” *read* “these, and”

On Plate II, *for* “6a,” *read* “5a.”

Chester: January, 1892.

DEMAS CORYLLI.

BY MAJOR JOHN N. STILL, F.E.S.

Why the English name (the nut-tree Tussock) is given to this moth I cannot understand, for out of the many dozens of the larvæ that I have beaten out, I have never got one from the nut, the greater proportion were from beech, although the oak has yielded a few.

The ♀ lays some fifty to seventy ova; the date last year with me being the 15th May; they hatched on the 11th June, the first to pupate did so on August 15th. The larvæ are extremely easily reared, but care is necessary to avoid their being thrown away with the food-plant during their moults, which take place between united leaves of the beech, where they seem to spin a web-like cocoon; the period of change lasting two to four days. They feed at all hours of the day and night, which, I think, accounts for one's being able to beat several larvæ from the same bush that a few hours before yielded none; when not feeding they are almost invariably between leaves, and are then most difficult to dislodge.

Stunted beech bushes in hedges I have found much more prolific than beech trees, and a bleak and exposed situation, at an altitude of 500 to 700 ft., much more so than the sheltered lower ground.

Newman, p. 40, *British Moths*, says: "The chrysalis is hairy, and may be found under the moss about the roots of beech trees." It may be presumptuous on my part to differ from such an authority, but the chrysalis appears to me to be smooth. In the breeding cages I have never seen the larvæ change on or under moss, although placed there for the purpose; all that I have reared during the last two seasons have changed between united leaves, of course, in the wild state this may be different.

It has been noticed by many collectors that the imago is seldom seen on the wing, and, certainly, as far as my experience goes, I have only seen it so on one or two occasions, when I beat out a worn female from beech; my impression is that the insect flies late at night or early in the morning. If a perfect insect is left in the hatching box all night, it is invariably in a most damaged condition in the morning, whereas they will rest perfectly quiet all day.

Mr. Parfitt, in the *Fauna of Devon*, *Lepidoptera*, says: "very rare in the Exeter district," but having taken the larvæ on two sides of the city, and last season forty dozen within twelve miles of Exeter, I feel sure that where the beech thrives, there *coryli* will be found, if thoroughly looked for. The imagines vary much in markings, and what I have always considered the type seems this year to be the most uncommon form.

In penning these few remarks, I have made no attempt to be scientific, but have simply put down a few facts in the life-history of this handsome species that have come under my immediate notice.

TWO NEW ENGLISH SPECIES OF *HOMALOMYIA*.

BY G. H. VERRALL, F.E.S.

By a curious coincidence I lately determined to revise my specimens of *Homalomyia*, and within an hour afterwards received a letter from Herr Stein saying that he was going to monograph the European species of the genus, and asking for the inspection of specimens. I finished my revision, and sent him specimens, which I believe included several undescribed species, but having worked so much at the genus I did not quite like resigning all recognition, and consequently I asked his permission to describe two species in which I took special interest. He at once asked me to describe them in the Ent. Mo. Mag., consequently I now give short descriptions, which I hope to amplify, with notes on other species, after Stein's Monograph has appeared.

H. CORVINA, *n. sp.*

Nitens, cæruleo-niger; *oculis* (♂) *haud cohærentibus*, *orbitis* (♀) *cæruleo-nitentibus*; *pedibus* (♂) *nigris*, *subsimplicibus*, *tibiis posticis antice infra versus vix ciliatis*, *mediis postice unisetosis*; *alis flavescentibus*, *halteribus aurantiacis*.

A largish species, distinguished at once by its blue-black shining appearance; the acrostichal bristles are about three-wide; the middle tibiæ slightly dilated on the apical half with a fine cilia beneath; the coxæ with long curved hairs rather than bristles; the hind femora bearing bristles near the tip only; the abdomen about $2\frac{1}{4}$ times longer than broad.

I caught one male at Ivybridge on June 13th, 1883, and four years afterwards on the same date one female at Dolgelly.

Herr Stein writes that he has received the species from various European localities.

H. KOWARZI, *n. sp.*

Tota grisea; *oculis* (♂) *haud cohærentibus*; *pedibus nigris*, *tibiis posticis antice infra versus vix*, *postice haud*, *ciliatis*, *mediis postice unisetosis*; *femoribus posticis antice prope apicem fasciculatis*.

A medium sized species, of which I took one specimen between Matlock and Matlock Bath on June 16th, 1888. The tuft in front of the hind femora is a most unique character. I have named it after Herr Kowarz, of Franzensbad, who has had the opportunity of bringing forward some exquisite new species, which will doubtless appear in Stein's Monograph.

Sussex Lodge, Newmarket :

May, 1892.

ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

(Continued from page 130).

32—HYPOSTENA, Mgn.

Gen. ch.—Eyes nude, nearer together in males than females; facial angle nearly straight; fronto-orbital bristles extending to about the end of second antennal joint; facial bristles sometimes wanting, sometimes extending half way up the facialia; cheeks narrow and nude; antennæ with the second joint rather short, and the third fully four times as long; arista sometimes pubescent; abdomen oblongo-cylindrical, with or without discal setæ; wings with the fourth vein bent in a curve, and apical cross vein ending near the apex of the wing, outer cross vein placed midway between the inner cross vein and the bend of the fourth. The species are mostly small, black, and glabrous.

- 1 (2) Facialia bare, frontalia wide 1. *procera*, Mgn.
 2 (1) Facialia ciliated, frontalia narrow.....2. *medorina*, Schnr.

H. PROCERA, Mgn., Schnr.

setiventris ?, Mcq.*incisuralis* ?, Mcq.*cyldracea*, Ztt.*chetigastrea* ?, Rnd.

Bright black; frontalia wide in both sexes, frontal stripe wide and black, sides of frontalia with blue-black reflections; facial setæ few or none; palpi yellow or piceous; antennæ with third joint long and thick; arista bare, thickened to about the middle, where it becomes abruptly slender; thorax with the shoulders cinereous; three post-sutural dorso-central bristles; abdomen narrow, cylindrical, very long in the male, with discal setæ on the middle segments, which are very small and rather indistinct in the female, sides of the segments with silvery-white reflections, forming portions of interrupted transverse bands; wings brown in the male, nearly white in the female, apical and outer cross veins both nearly straight. Very rare.

H. MEDORINA, Schnr.

Bright black; frontalia narrow, about one-sixth of the width of the head in the male; frontal stripe wide and piceous; face very narrow and white; facial setæ small, but extending half way up the facialia; antennæ with second joint a little elongated, the third slender, and about four times the length of the second; arista gradually thickened to about the middle, and slightly pubescent, with the second joint a little prolonged; palpi black; thorax with the shoulders snowy-white, and having a broken white line extending across the transverse suture; three post-sutural dorso-central bristles; abdomen brownish-black, with small patches of white reflections on the sides of the segments; middle rings with small discal as well as

apical setæ; wings brunescent; legs black. I received a specimen of this rare species from Mr. Billups in August, 1890, which he had bred from *Pædisca sordidana*.

34.—METOPIA, Mgn.

Gen. ch.—Eyes nude, widely separated in both sexes; fronto-orbital bristles in a double row at the back, both in males and females, but only in a single row in front in the former; facial angle oblique; forehead prominent, and having more or less silvery glitter; facialia ciliated along the whole or a greater part of their length; antennæ with the second joint short, and the third fully six times as long; arista bare; abdomen without discal setæ, and mostly spotted; wings with fourth longitudinal vein bent at a sharp angle, and furnished with a cubital appendix.

- 1 (7) (8) Legs black.
- 2 (3) Forehead of male coated in front with silvery lacquer; sides of frontalia only, silvered in the female 1. *leucocephala*, Rossi.
- 3 (2) Frontalia of ordinary form in both sexes.
- 4 (5) (6) Abdomen with sharply defined triangular spots...2. *argyrocephala*, Mgn.
- 5 (4) (6) Abdomen with semilunar or subtriangular spots 3. *campestris*, Fln.
- 6 (4) (5) Abdomen with nearly straight transverse bands.....4. *amabilis*, Mgn.
- 7 (1) (8) Legs with pale tarsi 5. *rubritarsis*, Ztt.
- 8 (1) (7) Legs with red femora 6. *forficula*, Newport.

M. LEUCOCEPHALA, Rossi.

♂. Forehead very prominent, glazed over the whole of its front portion with silvery lacquer, which extends to the roots of the antennæ, forming a kind of plate, which is usually divided in the middle by a fine, black, longitudinal line; the frontal space behind is wide, and of a dull black colour, having an indistinct broad central stripe; the fronto-orbital bristles are in a double row behind, and are interrupted by the silvery plate emerging in a single row in front of it; face glistening white, with black reflections; cheeks with a few soft hairs on their upper part; facialia ciliated with strong bristles nearly to the top; palpi black; antennæ black or grey; arista thickened to a little beyond the middle; thorax dark grey, with four black stripes and three post-sutural outer dorso-central bristles; abdomen with white or yellowish reflections, and marked on each of the last three segments with three subtriangular black spots; wings with several (5 to 8) small setæ along the base of the third vein, apical cross vein much curved; legs black.

♀. Forehead less prominent than in the male, and without the glistening plate; frontal stripe black, extending to the base of the antennæ, and wider than the sides of the frontalia, which are silvered on their front parts with white glitter; it is similar in other points to the male. Not rare.

M. ARGYROCEPHALA, Mgn.

Both sexes of this species bear a very strong resemblance to the female of *M.*

leucocephala, and have often been confounded with it; they differ, however, by being usually rather smaller, by having the frontal stripe (which extends to the base of the antennæ in both sexes) narrower, it not being wider than the sides of the frontalia; by the facial setæ being less; by the thorax being of a lighter grey and more distinctly striped; by the abdomen also being more cinereous, and marked by more clearly defined triangular spots; lastly, the arista is not thickened quite so far. The males and females are very much alike, but can be distinguished by the difference in the fronto-orbital bristles, those of the male being only in a double row at the back part. Rare. It is in Mr. Dale's collection, and I captured a single specimen in Kent in 1888.

M. CAMPESTRIS, Fln.

Frontal stripe much wider than the sides of frontalia; forehead slightly prominent; sides with face silvery-white, with dark reflections; cheeks without any hairs; arista with only basal third thickened (Meigen and Schiner say half); thorax with four moderately wide dorsal stripes, and three post-sutural outer dorso-central bristles; abdomen with silvery-white reflections, a central row of subtriangular spots and transverse sinuous bands, forming semilunar or irregular triangular spots on the sides of the segments; the male is usually more distinctly marked than the female, and has the fronto-orbital bristles only double at the hinder part; in other points this species resembles the former ones. Not common.

M. AMABILIS, Mgn.

This closely resembles *M. campestris*; the chief points of difference are that the forehead is a little more prominent, the arista is only thickened for a short distance at the base, and the longitudinal and transverse bands on the abdomen are nearly straight instead of being maculiform. Very rare.

M. RUBRITARSIS, Ztt.

flavitarrella, Ztt.

Masicera rufitarsis?, Mgn.

Forehead slightly prominent; face oblique; eyes rather nearer together in the male than in the female; frontal stripe much wider than the sides of the frontalia; black behind with grey reflections and red in front; sides of frontalia, like face, silvery-white, with grey reflections; fronto-orbital setæ small and far apart, extending to base of antennæ only, they are in a double row behind in the male; vibrissæ small; facial setæ minute, and extending up two-thirds of the face; palpi black with rufous ends; antennæ black or grey, third joint fully six times as long as the second; arista short and thickened for three-fourths of its length, then abruptly ending in a fine short bristle; thorax dark grey on the dorsum, with the shoulders and sides silvery-white, the white part extending a little across the transverse groove; in some lights two central black stripes are visible in the male, in the central part is shiny black; post-sutural outer dorso-central bristles three in number; abdomen subcylindrical, with thick apex in the male, ovoid and rather flattened in the female, grey with black bands, which form three irregular subtriangular spots on each segment in the male, but coalesce on the dorsum in the female, leaving it uniformly black, with only the spurs of three whitish bands on the sides; the seg-

ments are all smooth, without either discal or apical setæ, except on the end of the fourth; wings with the apical cross vein curved with a short appendix, outer cross vein straight; legs black, with the exception of the tarsi, which are testaceous or rufous, and also the knees and inner sides of the fore tibiæ in the male. This little species (only 4—5 mm. in length) seems very rare. I captured a single specimen of both male and female near Bicester, Oxon, in July, 1883.

There is very little doubt but that this is the same as the *M. rufitarsis* of Meigen, but the facial setæ are so small that he must have overlooked them, and, therefore, placed the species in the genus *Masicera*. In all the principal characters it is a *Metopia*, but very feebly ciliated.

M. FORFICULÆ, Newport.*

Mr. George Newport discovered a Tachinid which infests the common earwig. He gives an interesting account of its life-history during its larval and pupal states†, tracing it up to the development of the imago, which he says appears to belong to the genus *Metopia* of Meigen. His description of the fly (which I give below) is so vague and short however, that I do not think it is rightly placed in this genus, and it is doubtful whether any specimens are preserved.

"*Metopia forficulæ*, cinerea, oculis testaceis, antennis nigris, corpore pedibusque pilis longis nigris vestitis; thoracis pilis lineas 6 lineas longitudinales efformantibus, scutello alarum basi femoribusque ferrugineis.

"Muscâ domesticâ aliquanto minor; *forficulas* prope Londinum infestat."

(To be continued). 177

ENTOMOLOGICAL NOTES FROM TASMANIA.

BY JAMES J. WALKER, R.N., F.L.S.

At the conclusion of her first surveying season, H.M.S. "Penguin" arrived at Hobart, Tasmania, on December 13th, 1890, to refit, and work up the chart of that part of the north-west Australian coast on which she had been employed. Every one on board was heartily glad to enjoy the comfort and civilization of one of the most charming little towns in the Southern Hemisphere, in exchange for the solitude of the dreary and barren shores peopled only by a few wandering and implacably hostile savages, where we had spent the last six months; and our stay of thirteen weeks was regarded as only too brief by all of us. My opportunities for entomological work at Hobart were fairly ample, and I was also enabled, in February and March, to make two very pleasant excursions farther afield. One of these was to Franklin, a township in the midst of a fine forest district, about 30 miles distant from Hobart on the Huon River, where I enjoyed the

* Schiner, by mistake, refers this species to Mr. E. Newman, and Mr. Verrall does the same in his list.

† Proc. Linn. Soc., vol. ii, pp. 247—8, June 7th, 1853.

kind hospitality of the Rev. E. H. Thompson, a keen entomologist. The second excursion, of eight days' duration, was to Launceston, the chief town in the northern part of the island. Here I had the pleasure of meeting Mr. Augustus Simson, one of the best known of Tasmanian naturalists, to whom I am indebted for much valuable information and assistance, especially as regards *Coleoptera*.

The situation of Hobart, at the head of the fine estuary of the river Derwent, is exceedingly picturesque, and the surrounding country is beautifully varied with wooded hills and valleys, orchards, and cultivated fields; by far the most imposing feature in the scene is the huge square-shouldered mass of Mount Wellington, which rises abruptly just behind the town to a height of 4166 feet. It is a well built and cheerful town, and boasts of some fine public buildings, including an excellent little Museum, which contains a very complete collection of the Tasmanian fauna, and a fine scientific library belonging to the Royal Society of Tasmania. Just outside the town is a public park of nearly 1000 acres in extent, known as the "Queen's Domain," where a spare hour could always be pleasantly and profitably spent in searching for *Coleoptera* under the loose gum-tree bark. Most of my longer walks were taken in company with two residents of Hobart, Messrs. Rodway and Penny, both first-rate "bushmen," and thoroughly acquainted with the country and the Tasmanian flora; and our weekly tramp up the slopes of "the Mountain" will long live in my memory as among the most pleasant of my collecting reminiscences.

In the fields near the town it is astonishing to see how completely the native herbaceous plants have been ousted by the common grasses, cornfield-weeds, and "garden-escapes" of England, which thrive in this genial climate with a vigour and luxuriance unknown in their native country. Indeed, it is quite difficult to find, in some of the pastures, an indigenous plant, except by a close search in some out-of-the-way corner. The hawthorn, English gorse, broom, elder, and bramble are the common hedgerow shrubs, and the hawthorn here attains a height and thickness rarely seen at home in these days of "high farming" and wire fences. A composite weed from the Cape of Good Hope (*Cryptostemma calendulaceum*, Br.), is a great pest to cultivation, and still worse is the so-called "California thistle," our familiar *Cnicus arvensis*, Hoffm. Worst of all is the common sweet-briar, *Rosa rubiginosa*, Linn., which is certainly the best abused plant in the island. This bush has taken entire possession of extensive tracts of pasture land, it being disseminated chiefly by the cattle, which are very fond of browsing on the sweet "hips" in the autumn,

and when it is once fairly established, the long creeping roots render its extirpation almost impossible. Most of the English fruits thrive to perfection, especially the apple; but this tree has brought with it the "codlin moth" (*Carpocapsa pomonella*, L.), which is far more injurious to the crop than at home, and the "Codlin Moth Act," provided for its destruction, is strictly enforced.

Much of the country round about Hobart is still covered with the natural "bush," and the slopes of Mount Wellington, up to about 2500 feet, are clothed with a fine forest growth, in which the varied and beautiful Tasmanian flora is seen to great advantage. This forest has a somewhat sombre aspect from a distance, as it is mainly composed of three species of *Eucalyptus*—the "blue gum," *E. globulus*, Lab.; the "stringy bark," *E. obliquus*, L'Her.; and the "peppermint," *E. amygdalinus*, Lab. All these attain gigantic dimensions, trees of more than 200 feet in height and ten in diameter being common, and there are many of even larger size. These are varied, especially in the valleys, by clumps of the beautiful and fragrant "sassafras," *Atherosperma moschatum*, Lab., an elegant little tree of the natural Order *Monimiaceæ*, the leaves of which, when bruised, have a strong and very pleasant nutmeg-like scent; and of the native beech, *Fagus Cunninghami*, Hook., which grows to a large size, and is locally known as the "myrtle," from its small glossy evergreen foliage. The undergrowth, which in many parts is very dense, consists chiefly of *Acacias* of several species, fine shrubby or arborescent *Compositæ* (*Olearia*, *Ozothamnus*, *Bedfordia*, &c.), *Rutaceæ* (*Correa*, *Zieria* or "stink-wood"), the "native pear" (*Hakea*), and "native cherry" (*Exocarpus*), both very unsatisfactory representatives of the fruits after which they are named, *Rubiaceæ* (*Coprosma*), and, in some places, the fragrant "pepper tree" (*Drimys aromatica*, Müll.). Where this undergrowth has been burnt off by the frequent bush fires, a tall *Senecio* (*S. australis*, Willd.), like our ragwort, here called the "fire weed," takes possession of the burnt spots, and forms great masses of golden blossom, often several acres in extent. In many places locomotion is rendered difficult by the dense growth of "cutting grass" (*Cladium psittacorum*, Müll.), which grows in great tufts six feet high, with serrated edges to the leaves, the latter cutting like razors. Many beautiful flowers, including some fine and rare *Orchideæ*, bloom in the more open parts; and in the damp ravines ferns grow in astonishing variety and luxuriance, notably the noble tree fern, *Dicksonia antarctica*, Lab., which is often more than twenty feet high, with a trunk a foot and a half in diameter. The upper third of the mountain is very rugged and rocky, with stretches

of huge rounded boulders of greenstone, on which scarcely a shrub or a plant can find footing. Another *Eucalyptus* (*E. coccifera*, Hook.), which does not attain to any great size, here takes the place of the other species; and here, too, is found the pride and glory of the Tasmanian flora, the famous "Waratah" (*Telopea truncata*, Br.), a large shrub or small tree of the Order *Proteaceæ*, with oleander-like leaves and corymbs of magnificent crimson blossoms, visible at a surprising distance. On reaching the summit of the mountain one finds a considerable extent of nearly level and very rocky moorland, with small boggy places, supporting dense beds of *Sphagnum*, *Astelia*, &c.; and in the drier parts is a copious and interesting, though somewhat dwarfed, subalpine vegetation, consisting principally of uncommon species of *Compositæ*, *Epacrideæ*, *Proteaceæ* (*Orites*, *Bellendena*, &c.), and other flowers of great beauty. The view from the highest point, "the Pinnacle," which commands the valley and estuary of the Derwent, and the intricate maze of land and water to the southward and eastward as far as Tasman's Peninsula, is most superb on a clear day; and as there are good tracks to the summit, and the ascent is not very laborious, it is a very favourite excursion from Hobart.

In a locality apparently so favourable for butterflies I was surprised to find so small a number of species represented: Tasmania being, in fact, but little better off in this respect than New Zealand. There are, I believe, only some twenty-five species recorded from the entire island, of which I observed fifteen during my stay, some of them being very numerous as individuals. The beautiful green and black *Papilio Macleayanus*, Leach, was not rare, in March, along the Huon Road, about half way up the shoulder of Mount Wellington, where its food-plant, the "sassafras," abounds; I also obtained it in the north of the island, at "Denison Gorge," near Launceston, but it is not easy to get in good condition, and I could not succeed in finding the larva. Neither did I see a single white butterfly, though the widely distributed *Pieris teutonia*, F., is said to occur occasionally. The most abundant butterflies are the *Satyridæ*, two species of which, *Xenica Klugii*, Guér., and the fine *Heteronympha Merope*, F., are very plentiful in the "Queen's Domain," where *H. Philerope*, Boisd., also occurs. I did not meet with the latter species myself near Hobart, but I found it commonly at Franklin, and at Launceston in March. *Xenica lathoniella*, Westw., and *X. Hobartia*, Westw., are both locally common close to Hobart, but I missed the time for these, and of the

scarce and pretty little *X. leprea*, Hew., I saw only one or two, high up on the mountain, in March, when its flight was almost over. The *Vanessidæ* are represented by *Junonia Vellida*, F., *Pyrameis cardui*, var. *Kershawii*, McCoy, and *P. Itea*, F., all three of which are not scarce; and I have found the larva of the last mentioned insect on *Urtica incisa*, Poir., a nettle of the most formidable stinging powers. *Lucia aurifer*, Blanch., a pretty little orange and brown butterfly, haunts sunny banks and road-sides, like our *Chrysophanus Phlæas*, which it much resembles in its flight and habits. I met with three species of *Lycæna*, *L. Phæbe*, Murr. (a very widely distributed Australian species), and the little dark brown *L. agricola*, Doubl., being very common; *Lampides bætica*, L., also occurs, but I did not come across it. Three species of *Hesperidæ* are found on the slopes of Mount Wellington, but none of them are plentiful.

The Tasmanian moths are numerous, and several of them are very handsome, but I did not get a great many during my stay. Perhaps the species which pleased me most was a little moth, almost a *fac simile* of our *Psodos coracina*, except that it has the basal half of the hind-wings pure white; it occurred pretty commonly on one occasion at the top of Mount Wellington. The "wattle" trees (*Acacia spp.*) are much damaged by the larvæ of a huge moth allied to *Cossus*, which bores into the solid wood like its English prototype, and the imago is sometimes found drying its wings on the trunks. These big white larvæ were in old times a favourite food of the natives, and even now, I am told, are not despised by some of the colonists. In dry sunny places the pretty little metallic-green species of *Pollanisus* are common, and they remind one forcibly of our "Green Foresters." The cocoons of a fine large *Bombyx* allied to *Odonestis* (*Doralia adusta*) are found in large numbers under loose flakes of *Eucalyptus* bark.

As usual, the *Coleoptera* took up most of my spare time and attention, and I have every reason to be satisfied with my success as regards this Order, as, in the three months of my stay, I obtained representatives of more than 700 species, of which quite 600 came from the Hobart district alone. This number in all probability represents but a small part of the actual Coleopterous fauna of Tasmania, which, when it is as thoroughly worked out, will, I think, compare very fairly with that of an equal area in the British Islands.

(To be continued.)

A NEW GENUS OF *EUSTHENINÆ*.

BY E. BERGROTH, M.D.

Mr. F. Sikora, who is now so successfully collecting in Madagascar, has recently sent me a new genus of the *Eustheninæ* (*Tessaratominaæ*), which is a new addition to the many aberrant *Hemiptera* of this island. It cannot be properly placed in any of the five sections of this sub-family, as defined by Stål (Enum. Hem., i, p. 60), but may, notwithstanding the presence of three distinct basal areas of the membrane, be included in the *Haplosternina* (*Cyclogastrina*, Stål). It differs, however, so widely from the other four genera of this section, *Haplosterna*, Westw., *Natalicola*, Spin., *Liphæmus*, Stål, and *Cyclogastridea*, Reut., as to render a comparison with them unnecessary.

PLATYTATUS, *nov. gen.*

Corpus ovatum, granulatum, et supra et subtus valde deplanatum. Caput triangulare, horizontale, lateribus ante oculos levissime sinuatis, ocellis ab oculis atque a linea media capitis subæque longe distantibus, jugis acuminatis tylo paullo longioribus, apice libere prominulis, tuberculis antenniferis prominentibus, insertione antennarum a supero apparente, his quinque-articulatis, articulo primo incrassato, apicem capitis subattingente, articulo tertio brevissimo, annuliformi, bucculis fere percurrentibus, modice elevatis, rostro longo, gracili, post coxas posticas longius extenso, articulo primo bucculis vix longiore, secundo longissimo duobus ultimis unitis multo longiore, coxas medias subsuperante, tertio quarto paullo brevior. Pronotum apice sat profunde sinuatum, lateribus rotundatum, basi retrorsum haud productum, margine apicali leviter calloso-elevato, marginibus lateralibus leviter explanatis et subreflexis, margine basali late levissime subrotundato, angulis anticis rotundatis, lateralibus obtusis non prominulis, posticis deletis. Scutellum triangulare, æquilaterum, apicem segmenti secundi connexivi haud attingens, apice breviter spathulato-producto, frenis fere ad apicem scutelli extensis. Prosternum medio planum, haud sulcatum; mesosternum prosterno medio dimidio longius, sulco lato medio profundo instructum et in fundo sulci iterum anguste sulcatum; metasternum medio prosterno paullo longius, sexangulare, haud elevatum sed leviter concavum, orificiis brevibus, marginibus in cochleam intortis. Corium scutello multo longius, margine costali, ante medium obtuse angulato, ante angulum leviter explanato-reflexo, margine apicali levissime subrotundato; membrana cellulis basalibus tribus oblongis contiguis instructo, his cellulis venas simplices sex vel septem emittentibus, una alterave harum venarum interdum furcata. Abdomen hemelytris latius, angulis posticis segmentorum leviter prominulis, ventre medio late leviter sulcato, sulco pone segmentum quartum evanescente, segmento secundo medio tuberculo destituto, spiraculis paullo ante medium segmentorum positiss, a margine laterali quam a margine postico vix longius distantibus. Pedes granulati, medii quam postici paullo latius distantes, postici quam anteriores longiores, femoribus omnibus nonnihil incrassatis, inermibus, tibiis compressis, subtriquetris, tarsis biarticulatis.

PLATYTATUS AMBIGUUS, *n. sp.*

Piceo-niger, apice articuli quarti antennarum, signis duobus introrsum curvatis ante medium pronoti apiceque scutelli luteo-testaceis, rostro ferrugineo, sternis et abdomine medio cum coxis et trochanteribus interdum piceo-ferrugineis. Caput subrugoso-punctatum, antennis latitudine basali pronoti paullo brevioribus, articulo secundo primo duplo longiore, tertio latitudine sua vix duplo longiore, quarto secundo subæquali, quinto quarto paullo brevior, rostro apicem segmenti tertii ventralis attingente. Pronotum basi hemelytrorum paullo angustius, longitudine sua media plus quam duplo latius, lateribus ante medium fortius rotundatis, dimidio antico disci subtiliter granulato-punctato, dimidio postico parce sat fortiter hic et illic transverse subseriatim granulato-punctato, limbo basali subtiliter punctato. Scutellum sparsim granulato-punctatum. Pectus parce granulatum, mesosterno medio per spatium latiusculum læve, metasterno medio oblique striguloso. Hemelytra apicem segmenti sexti dorsalis abdominis haud attingentia, corio sæt dense granulato. Abdomen dorso fere concolor, connexivo minute granulato, segmento ultimo hujus in mare apice quam basi paullo latiore, margine apicali late oblique truncato, angulo apicali a segmento genitali longius distante et hoc subsuperante, ventre parce granulato, medio et limbo laterali extra spiracula lævigatis, segmento quinto maris medio quarto paullo brevior, sexto quinto duplo longiore, segmento genitali maris segmento sexto ventrali medio subæquilongo, apice obtuse rotundato, supra subtiliter granulato, subtus transversim subtiliter strigulato. (Femina ignota).

Long., ♂, 12—13 mm.

Patria, Madagascar. Coll. mea.

This curious Pentatomid has quite the aspect and the sculpture of an Aradid, and has very probably the same *modus vivendi*, under bark and arboreous fungi.

Tammerfors, Finland :

April 9th, 1892.

A NEW SPECIES OF *HELOPELTIS*.

BY DR. O. M. REUTER.

In the Ent. Mo. Mag., xxv, p. 272 (1889), my friend, Dr. E. Bergroth, has published a list of the species belonging to the very remarkable Capsid genus *Helopeltis*, Sign., and also described a new species from Sikkim. The species are found in the Indian and Malayan regions ; it is, therefore, surprising to find that the genus is represented also in the Ethiopian region. I possess in my collection two specimens of a new *Helopeltis*, taken in Gaboon, and communicated by Mr. Sven Lampa, of Stockholm ; I name this species *H. Bergrothii*. The food-plant of this is unknown.

HELOPELTIS BERGROTHII, n. sp.

Mas. : *ochraceus vel fere aurantiacus, pedibus concoloribus, vertice, fronte, clypeo, oculis antennisque nigris ; clavo, tertia basali parte excepta, corio*

dimidio apicali, cuneo membranaque cinereo-nigricantibus, hac iridescente; alis nigricantibus, pulchre iridescentibus; cornu scutellari levissime retrorsum nutante, sub-recto.

Long. cum hemielytris, 9 mm.

Patria: Gaboon.

Caput a latere visum inferne altitudine nonnihil brevius. Rostrum coxas intermediis laud superans, extremo apice nigricante, articulo primo capite paullo brevior. Antennæ longissimæ, subtiliter brevissime et dense pilosulæ, articulo primo margine corii laterali vix brevior, apice incrassato pallidior, extrema basi ochracea; secundo primo longior, tertio secundo paullo brevior et quarto fere triplo longior; longitudo articuli primi fere 5, secundi $6\frac{3}{4}$, tertii $5\frac{3}{4}$, quarti 2 mm. Pronotum unicolor, postice convexum et versus apicem valde declive, annulo apicali fortiter constricto, sat magno. Scutellum pallidius cinerascenti flavescens, fere æque longum ac latum, sub-triangular, ipso apice autem truncato, cornu pronoti (annulo apicali excepto) æquelongum vel vix longior, basi et apice pallidior, ipso apice fuscescente leviter dilatato et nonnihil oblique truncato. Hemielytra abdomen longe superantia. Femora leviter curvata et levissime nodulosa, ante apicem incrassatum constricta. Tibiæ rectæ, subtiliter pilosulæ. Tarsi breviusculi, articulo primo et tertio fere æquilongis, apice nigricantibus, secundo brevi. Unguiculi nigri, apice testacei, aroliis valde divaricantibus.

This species is easily distinguished from the others by the pale colour of the body, and by the concolorous pale legs. The antennæ are not broken in the specimens, and the last joint is very short.

Helsingfors: May 8th, 1892.

Arena Octavii, Fauvel: a genus and species new to Britain.—In July, 1891, Mr. G. W. Tait, of Knowle, captured a number of interesting beetles in the neighbourhood of Ilfracombe and Lynmouth. These he very kindly submitted to me for examination, and amongst them I found several rare species not previously recorded from that district. In the Ilfracombe lot was a single beetle, which I recognised as being like one taken by myself at Weymouth, and which had been put aside for determination until other specimens could be obtained. Being evidently new to the British fauna, I sent them to Dr. Sharp, who reported in effect that they were the long-looked-for *Arena Octavii*. My specimen was taken on the Chesil Beach, in June, 1883, under stones embedded in the sands, accompanied by *Phytosus balticus*, and Mr. Tait's was captured in a dead gull on the shore near Ilfracombe.

From Lynmouth there were *Gnypeta cærulea* (taken in damp shingle on river bank), *Leptusa analis* (under bark of log), *Sipalia testacea* (under stones below tide mark), and *Anoplodera sexguttata*, with confluent hinder spots (on flowers of *Compositæ*).—W. G. BLATCH, Brockenhurst, Knowle, near Birmingham: May 17th, 1892.

Stiliculus fragilis at Shirley.—Last year I took this beetle in April at Shirley, in a faggot stack, and this year I took it in the same place, in numbers, in company with Mr. Chitty. The following captures during 1891 are, perhaps, also worthy of

mention : *Mycetophagus quadriguttatus*, from a granary in Holborn, March 24th ; *Conopalpus testaceus*, Bishop's Wood, April 11th ; *Dryocætes coryli*, Coombe Wood, July 25th ; *Prionus coriarius*, *Dasytes niger*, and *Cyrtotriplax bipustulata*, New Forest, early in August ; *Aspilota rufipes*, Gravesend, September 12th ; in August, 1890, I found a specimen of *Oberea oculata* at Wicken Fen.—HORACE ST. J. DONISTHORPE, 37, Courtfield Gardens, South Kensington : May, 1892.

Cicindela campestris and *Halictus rubicundus*.—I was amused whilst watching for *Hymenoptera* in a sort of quarry near here to see a *Cicindela* pounce upon a *Halictus rubicundus*. I was interested as to how matters would go, and amused to see the *Cicindela* quickly relax its grasp, and the *Halictus* fly off ; the *Cicindela* immediately afterwards apparently cleaning its mouth up with its front tarsi, as if the encounter had not been agreeable ; *H. rubicundus*, I know, can sting pretty sharply, but whether it used its sting in this case or not I had no means of judging, but *Cicindela* being so much the larger and stronger insect of the two, I think the *Halictus* could not have got out of its grasp without using some means of defence other than bodily strength.—EDWARD SAUNDERS, Broad Park, Ilfracombe : May 16th, 1892.

Epeolus productus, Thoms., and *rufipes*, Thoms.—Last year, when setting some female examples of *E. rufipes*, Thoms., I noticed two processes protruding beyond the apex of the 5th ventral segment. I accordingly pulled the apical segments out as far as I could, and put the specimens away for examination on some future occasion. I have just had an opportunity of examining them, and find that these processes are lateral productions of the 6th ventral segment, which lies hidden beneath the 5th. I have not noticed any such processes in other genera, and they are useful in affording a good specific character between two very closely allied species. In *rufipes*, Thoms., each process is about four times as long as wide, sub-parallel sided, the sides converging to the apex in convex lines, the apex being pointed ; the sides near the apex are roughened but not distinctly dentate, between the processes the apical margin of the segment is slightly and angularly produced in the centre, and fringed with short hairs. In *productus*, Thoms., the processes are longer and more spatulate in form, the sides of the slightly dilated apical portion are distinctly dentate, and the apical margin of the segment between the processes is truncate and fringed with much longer hairs than in *rufipes*.—LD., St. Ann's, Woking : May 6th, 1892.

Gossyparia ulmi.—This remarkable Coccid was first noticed by Réaumur without name, except that of the "Progallinsecte" of the elm ; he gives its natural history and figures the female in all its stages (Mém., T. iv, p. 154, pl. vii, figs. 1—10, 1738). De Geer, under the name of *Coccus farinosus alni*, also described the same species as found on the alder, and gave figures of the female in all stages (Mém., vi, p. 443, pl. 28, figs. 16—22, 1776). Geoffroy, however, had previously described the same insect as *Coccus ulmi*, citing Réaumur only, but without quoting any figure, and his specific name takes precedence by priority (Hist. abr. des Insectes, T. i, p. 512). Signoret describes and figures both ♂ and ♀, the former for the first time, but it is

the imperfect form with short wings (moignons d'élytres), and created for the species the generic name of *Gossyparia* (Essai, p. 318, pl. xv, figs. 2, 2a—2d, 1875). Lastly, Mr. L. O. Howard has described and beautifully figured as a species imported into America the insect in all its stages, and not only the short-winged male forms mentioned by Signoret, but also those with fully developed wings, which do not appear to have been seen before. They were all found on elms, *Ulmus americana*, as well as upon *U. campestris* and *U. montana*, both European species, the former of them in this case imported from England. This is all the more curious, as *Gossyparia ulmi* is not known to inhabit England; but, as it now seems sure that it exists in Britain, I give this note in the hope that it may be discovered. Its usual habit, at any rate in its ultimate state, is to fix itself on the bark, where the white cottony case is conspicuous, the peculiarity which at once distinguishes it being that it does not entirely cover the insect, but the dark back of this is left exposed. Adult in June. The length is 3—4 mm. (Insect Life, vol. ii, p. 34, 1890).—J. W. DOUGLAS, 153, Lewisham Road, S.E.: May 2nd, 1892.

Parlatoria zizyphi, Lucas.—At the beginning of April Mr. McLachlan gave to me some "blood oranges" bought in a shop in London, but of which the native country was not known—probably it was Malta, and on them were many black scales, remarkable for their quadrangular shape. As well as I could make out from the imperfect examination I was able to make, they were ♀ *Parlatoria zizyphi*, Lucas, as interpreted by Signoret, differing a little in form from his figure (Essai, pl. v, fig. 9a) by being straighter on the sides; Comstock's fig. 5, pl. xi, in his "Report for 1880," is much better. To be more sure I sent some of the scales to Mr. Morgan for a minute investigation, and he has now reported that he quite agrees in the specific determination. Boisduval, who described it as *Kermes aurantii*, many years after Lucas had designated it as *C. zizyphi* living on *Zizyphus pinnachristi* (a species of a genus of *Rhamnæ*), says that it is found commonly in Algeria and at Pau, France; and Signoret had seen it abundant not only on the fruit, but also on the branches and leaves of orange, lemon and jujube trees. *Mytilaspis citricola*, a near relative, was also present on the blood oranges, but the fruit was not deteriorated by the dual settlers.—ID.: May 10th, 1892.

Papilio Antimachus, female.—A specimen of this (so far as I can learn) unique insect has just come to hand from the Gaboon, West Africa. It is a very small insect, and differs from the male by the fore-wings being rounded on the outer margin instead of concave, they are also much less clothed with scales and approach a semi-diaphanous condition; it was accompanied by an unusually fine, large, dark male specimen caught in the same locality, and both specimens are in good order. The anal segment of *P. Antimachus* is exactly the same sexually as in the genus *Ornithoptera*, the males having a horny clasped terminal, whilst in the female it is simple and thickly pubescent. Both the specimens have been added to the fine collection of Mr. Herbert J. Adams, F.E.S., of Enfield, whose New Museum being now completed, the collections can be seen by appointment.—WILLIAM WATKINS, The Hollies, Croydon: May 5th, 1892.

Aporia cratægi.—As the season for this fast disappearing species is at hand, may I ask entomologists not only to keep a careful look out for it, but also to record any capture. It seems almost certain that it soon will be a thing of the past, as far as English specimens are concerned, and the last records of its capture will be interesting in the future. In the "Entomologist's Record" for April last, Mr. Tutt mentions that the last record of the species was that of the specimens taken in 1887, vouched for by Mr. Webb (Ent. Mo. Mag., vol. xxiv, p. 131); but this is an error on Mr. Tutt's part, as it was taken in 1888, and recorded in the "Entomologist," vol. xxi, p. 184. I am under the strong impression that I either read or was told of its capture in North Kent in 1890, but can find no note of it.—C. A. BRIGGS, 55, Lincoln's Inn Fields: May 18th, 1892.

Prices of British Lepidoptera.—At the sale of the collection of the late Mr. Arthur Naish, of Bristol (whose name appears frequently in the first volume of the "Intelligencer"), at Stevens' Rooms on May 16th, some of the extinct (or nearly so) species of British *Lepidoptera* fetched high prices. We note the following. Seven examples of *Lycæna dispar* (the long extinct British form of *L. Hippothoë*) realized £16 8s., or an average of nearly £2 7s. each; a ♂ sold for £3 3s., and a ♀ for £4 10s., these being in very fine condition. A lot containing four *Polyommatus Acis* (perhaps extinct) was sold for 18s. Eight *Lælia cænosa* (apparently recently extinct) were sold for £3 17s. 6d. Two *Cleora viduaria* (not found very recently) were knocked down for a guinea. Seven *Noctua subrosea* (long extinct as British, and the continental form of which, *subcærulea*, is very different in appearance) obtained £6 12s., one very fine example realizing £2 10s.—EDS.

The Entomology of the month of April.—The fine warm weather which commenced on March 25th continued till April 14th, when there was a return of snow storms; then, on the 21st, the weather turned warmer again, but colder again on the 25th. Almost throughout the month there was a continuance of N. E. winds and brilliant sunshine with frosts, and sometimes sharp ones at night. The effect upon insect life in Dorsetshire has been a remarkable one; butterflies have been unusually plentiful, moths unusually scarce. During the first fortnight *P. rapæ* and *napi* appeared in numbers, accompanied by a few of *brassicæ*, and several of *rhamni*, *V. cardui* and *urticæ*, and more of *Atalanta* than I have ever seen in the spring. Both *rapæ* and *napi* appeared on the 2nd. *Andrena Clarkella* and *Gwynana Nomada borealis* and *Fabriciana*, and *Bombylius major* also appeared commonly, with a few of *Anticlea badiata*. Now came the change. From the 14th to the 21st hardly any of the above were to be seen, and one or two of *urticæ* again retired to winter quarters in my house. On the 23rd I went to the New Forest for the day, and there saw *H. Egeria* in abundance, and a solitary specimen of *E. abbreviata*; strange to say it has been the only *Eupithecia* I have seen this year. *Tortricodes hyemana* and *Diurnea fagella* have likewise been unusually scarce. The first *A. cardamines* (a female) appeared on the 11th. The weather since May 5th has again been warmer, and the previously named butterflies abundant again, in company with *A. cardamines* and *A. Euphrosyne*. It appears, therefore, that easterly wind with frosts at night are injurious to moth life, but do not affect butterfly life, so long as

there is plenty of blue sky and sunshine. I may as well add, that I met with *Limnobia nigrina* and *trimaculata* and *Tipula plumbea* at Bournemouth on the 26th. —C. W. DALE, Glanvilles Wootton: May 12th, 1892.

Obituary.

Dr. Carl August Dohrn died on the morning of May 4th, at Stettin, in the 86th year of his age, having been born on June 27th, 1806. He having lived so long we can hardly say his demise was unexpected, yet after all, even when its advent seems near, death always comes as a surprise and with a shock to survivors. He had wished that his end might be sudden, and he obtained his desire. For some years, in order to escape the rigour of a northern climate, he had spent the winter in Italy, but the last season he remained at home, and in the autumn had an attack of influenza, from which, however, he had fairly recovered, for we heard from him that at the end of January he had been able to resume his entomological studies, and was in high spirits, "having received upwards of 1000 beetles from Sumatra which kept him busy from morning to night."

We are not aware of the cause of his bias towards entomology, but Hagen gives his first published article as in the "Entomologische Zeitung" for 1845, but he must have been an entomologist long before that time. On the death, at the comparatively early age of 39, of Dr. Wilhelm Schmidt, the first President of the Entomological Society of Stettin, which had been founded in 1839, C. A. Dohrn, who was then officiating as Secretary of the Society, was selected for the vacant post, and at the ensuing Anniversary Meeting, November 5th, 1843, was duly elected President, a position he continued to hold for upwards of 40 years. He retired in 1887, and the post was conferred upon his eldest son, Dr. Heinrich Dohrn. His youngest son, Dr. Anton Dohrn, is the well-known founder of the Zoological Station at Naples.

The flourishing state of the Society during all this time is the best evidence of the power of Dohrn to attract and keep together the bulk of the entomologists of Germany and many of other countries, and his influence remained great. *Coleoptera* occupied his own attention, but he had a regard for insects of other Orders, if only for the reason that it brought him into communication with the lovers of them; for he had a sympathy not only with entomologists as such, but also as cultivators of a sense of pleasure and enjoyment in the varied realm of Nature, and he was able, as a rule, to give far more general information on cognate matters than he received. He often visited other countries: he came to England several times, amongst others in 1852 with Zeller, in 1854 with Boheman, and in 1857 with Hagen. He was elected a Member of the Entomological Society of London in 1855, and an Honorary Member in 1885.

Besides being a good classic, he had a very competent knowledge of European languages, most of which he could speak, read and write with facility, and he was delighted to get a good story in any of them, for he had a keen sense of wit and humour. He learned English in order to read Shakespeare's works in the original, and he had a more intimate knowledge of them than most Englishmen; and as evidence of his proficiency in English may be quoted his translation from Waterton's

"Wanderings" of the account of the ludicrous nocturnal adventure with ants of a visitor to a West Indian plantation, which he published in the *Entomol. Zeitung* for 1876. That periodical, which is the organ of the Stettin Society, and was edited by Dohrn as long as he remained President, also contains copious articles by him, many of them descriptive of new species of beetles, and many relating to authors and their works, and notes of travel. His own collection of *Coleoptera* was very extensive, almost unique in the completeness of some families and genera, such as, for instance, the *Paussidæ*, and nothing delighted him more than the acquisition of a specimen of a new species of these, his darlings.

But Dohrn was much besides an entomologist, for he excelled as a *littérateur*, and among other things translated from the Spanish into German several of the plays of Calderon. These, we believe, brought him under the notice of the king, Frederick William IV, and his musical talents made him often a welcome visitor at the royal palace.

This leads us to speak of Dohrn as a musician. He was not only a dramatic singer, but a performer on the piano with an excellence rarely attained by any but professionals, not only as regards mechanical efficiency, but with an intellectual and appreciative understanding of the works of the greatest masters. To hear him was one of the greatest enjoyments possible.

In his own house he was most hospitable, kind and considerate, and those who have enjoyed his company on such occasions have ever felt an aching void when they came to an end. Of such a man it may truly be said, in the words of Campbell—

"To live in hearts we leave behind,
Is not to die."

—J. W. D.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *May 9th*, 1892.—Mr. G. H. KENRICK, F.E.S., Vice-President, in the Chair.

Mr. Robert Allday, Handsworth, was elected a Member.

Mr. P. W. Abbot showed *Melitæa Athalia* from Abbott's Wood, also from South of France; *Oporina croceago*, taken on sallow blossoms at Wyre Forest, and other *Lepidoptera*. Mr. Kenrick remarked that the English *Athalia* were finer than the French. Mr. G. W. Wynn showed a number of moths taken at the sallows at Moreton Green, including *Tæniocampa populeti*, *gracilis*, &c. Mr. R. C. Bradley read a paper on the *Tipulidæ*, showing six boxes of specimens in illustration; he said that there were 170 British species, out of which he had taken 112, also one new to Britain, two formerly considered as doubtfully British, and one or two, perhaps, new to science.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *May 9th*, 1892.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

The Rev. H. H. Higgins, M.A., read a paper, entitled, "Butterfly Life before

leaving the Egg." The paper was illustrated by various eggs of *Lepidoptera* shown under microscopes. Mr. Higgins also exhibited some Brazilian *Lepidoptera*, and pointed out a strong case of mimicry. The President exhibited the rare *Crambus myellus* from Perth. Mr. Stott, a case of Educational Entomology, on behalf of Mr. Rigby, N. H. Museum, Nottingham, containing the life-history of *Eriogaster lanestris*. Mr. Jones, recently bred *Lepidoptera*, and a fine variety of *Asphalia flavicornis*.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
April 28th, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. J. V. Blackford, M.B., F.R.C.S., was elected a Member.

Mr. A. Cant exhibited a case of the genital organs of the *Hesperiidæ*, mounted in such a manner that they could be kept with the series in the cabinet. Mr. Frohawk, varieties of *Pieris rapæ*, L., from Cambridge, a variety of *Argynnis Euphrosyne*, L., and a black example of *Apatura Iris*, L. Mr. C. G. Barrett, on behalf of Major Still, a series of *Demas coryli*, L. On behalf of Mr. Sabine, Mr. Barrett also exhibited a variety of *Papilio Machaon*, L., with the dark bands narrow and marginal primrose spots broad and bright; a specimen of *Argynnis Latona*, L., with large black spots, and the wings suffused with a peculiar bronze colour; *Argynnis Euphrosyne*, L., having the black spots massed together into large, sharp, deep, black bands, and the fulvous colour in bright intermediate bands; and a much suffused specimen of *Argynnis Selene*, Schiff., with the black spots massed in broad ill-defined bands. Mr. Barrett likewise, on behalf of Mr. Sydney Webb, exhibited varieties of *Melanargia Galatea*, L., varying from dark to very pale forms. Mr. Billups exhibited *Pimpla graminella*, Schr., remarking that the cocoons were obtained from a larva of *Odonestis potatoria*, L., and given to him by Mr. Fenn in January, 1891; four specimens were bred in 1891, and nineteen emerged during the present month.

THE TWELFTH ANNUAL EXHIBITION was held on Thursday and Friday, the 5th and 6th of May, at "The Bridge House," London Bridge, S.E. Mr. C. G. Barrett, F.E.S., President, supported by Mr. J. Jenner Weir, F.L.S., &c., Vice-President, formally opened the Exhibition, which comprised examples of all branches of Natural History. The exhibits were arranged in three large rooms, in a fourth room Mr. Reeves exhibited original diagrams of horses in motion, and explained his drawings by the aid of a zoetrope, and a fifth room was set apart for lectures, which were illustrated by slides thrown on a screen by the oxy-hydrogen lantern. During each evening Mr. F. Enock, F.E.S., &c., gave the "Life-history of the trapdoor spider," illustrated by his original micro-photographs; Mr. E. Step, "A talk about toadstools;" and Mr. G. Day, F.R.M.S., "Domestic Friends and Foes." Among the more important of the Entomological exhibits were those of Mr. J. H. Leech, who showed a number of drawers containing Palæarctic *Lepidoptera*; Mr. S. Edwards, a large selection of Exotic *Rhopalocera*; Mr. J. Jenner Weir also showed exotic species arranged to show mimicry; Mr. Crockett, life-histories of many silk

producing species of Bombyces. British *Lepidoptera* was represented by over forty exhibitors, including Mr. C. G. Barrett, Dr. Wheeler, Messrs. J. E. Robson, S. Webb, P. B. Mason, C. S. Gregson, W. Tugwell, J. A. Clark, J. W. Hall, A. Short, A. W. Mera, O. Goldthwait, J. Henderson, W. Machin, J. W. Tutt, W. Farren, C. H. Williams, R. Adkin, J. Wellman, J. Adye, R. S. Standen, — Jäger, R. South, F. Merrifield, &c., &c. In other Orders, Mr. R. McLachlan exhibited European *Neuroptera*. *Coleoptera* were shown by Mr. W. West, Mr. J. Lewcock, and Mr. T. R. Billups; the last named gentleman also exhibiting British *Hemiptera-Heteroptera* and *Homoptera*, *Hymenoptera-Aculeata*, and *Ichneumonidæ*, long series, many being unique and others new to science, also two drawers showing the life-histories of many species of internal parasites, an exhibit which was certainly one of the most instructive in the room. Mr. Auld showed nests of hornets, and Mr. H. Moore, exotic *Orthoptera* and wasps' nests. Mr. C. H. Goodman had two cases of dissections illustrating the comparative anatomy of the different Orders of Insects.

During the two days the Exhibition was open it was visited by over 1100 visitors.—H. W. BARKER and H. SHORT, *Hon. Secs.*

ENTOMOLOGICAL SOCIETY OF LONDON: *April 27th*, 1892.—ROBERT McLACHLAN, Esq., F.R.S., Treasurer, in the Chair.

Mr. William Edward Baily, of Lynwood House, Paul Churchtown, Penzance, and Mons. Edmond Fleutiaux, of 1, Rue Malus, Paris, were elected Fellows of the Society.

Mr. C. G. Barrett exhibited, for Mr. Sabine, varieties of the following species, viz., one of *Papilio Machaon*, bred by Mr. S. Bailey at Wicken in 1886; one of *Argynnis Lathonia*, taken at Dover in September, 1883; one of *A. Euphrosyne*, taken at Dover in 1890; and one of *A. Selene*, taken at St. Osyth in 1885 by Mr. W. H. Harwood. He also exhibited a long series of *Demas coryli*, reared by Major Still from larvæ fed exclusively on beech, which he said appeared to be the usual food of the species in Devonshire, instead of hazel or oak. Mr. Barrett likewise exhibited, for Mr. Sydney Webb, a number of varieties of *Arge Galathea*, *Lasiomata Megæra*, *Hipparchia Tithonus*, and *Cænonympha Pamphilus*, from the neighbourhood of Dover.

The Rev. J. Seymour St. John exhibited a variety of the female of *Hybernia progemma*, taken at Clapton in March last, in which the partially developed wings were equally divided in point of colour, the base being extremely dark and the outer portion of the wing very pale.

The Rev. Canon Fowler made some remarks on the subject of protective resemblance; his attention had been recently called to the fact that certain species of *Kallima* apparently lose their protective habit in some localities, and sit with their wings open, and Dr. A. R. Wallace had informed him that he had heard of a species of *Kallima* sitting upside down on stalks, and thus, in another way, abandoning its protective habits. Mr. W. L. Distant said that a species of butterfly in South Africa, which, when its wings were vertically closed, resembled the reddish soil on which it settled, in the Transvaal rested with open wings on quartzite rock, which

the upper surface of the wings protectively resembled. Mr. Barrett, Mr. McLachlan, Mr. Jacoby, Mr. Champion, Rev. Canon Fowler and Mr. Frohawk continued the discussion.

Mr. Goss informed the Meeting that, in pursuance of a Resolution of the Council passed in March last, he and Mr. Elwes had represented the Society at the recent Government enquiry as to the safety and suitability of the proposed Rifle Range in the New Forest, held at Lyndhurst by the Hon. T. W. H. Pelham, on the 20th, 21st, 22nd and 23rd inst., and that they had given evidence at such enquiry, and addressed a large meeting of War Office officials, Verderers and Commoners.—H. GOSS and W. W. FOWLER, *Hon. Secs.*

May 11th, 1892.—FREDERICK DUCANE GODMAN, Esq., F.R.S., President, in the Chair.

Dr. Edward A. Heath, M.D., F.L.S., of 114, Ebury Street, Pimlico, S.W., and Mr. Samuel Hoyle, of Audley House, Sale, Cheshire, were elected Fellows of the Society.

The President announced the death, on the 4th of May, of Dr. C. A. Dohrn, of Stettin, one of the ten Honorary Fellows of the Society. Mr. Stainton expressed regret at the death of Dr. Dohrn, whom he had known for a great number of years, and commented upon his work and personal qualities.

Dr. D. Sharp exhibited drawings of the eggs of a species of *Hemiptera*, in illustration of a paper read by him before the Society; and also a specimen of a mosquito (*Megarhina hamorrhoidalis*) from the Amazon district, with the body, legs and palpi furnished with scales as in *Micro-Lepidoptera*.

The Rev. Canon Fowler, on behalf of Mrs. Venables, of Lincoln, exhibited cocoons of a species of *Bombyx* from Chota Nagpur, India; also the larva cases of a species of *Psychidæ* (*Cholia Crameri*) from Poona, India; and a curious case, apparently of another species of *Psychidæ*, from the Island of Likoma, Lake Nyassa.

Mr. F. W. Frohawk, on behalf of the Hon. Walter Rothschild, exhibited a specimen of *Pseudacraa miraculosa* mimicking *Danaïs Chrysippus*; also a specimen of the mimic of the latter, *Diadema Misippus*, and read notes on the subject.

Mr. C. G. Barrett exhibited, and commented on, a long series of specimens of *Melitæa Aurinia* (*Artemis*) from Hampshire, Pembrokeshire, Cumberland, and other parts of the United Kingdom; also a long and varied series of *Coremia fluctuata*.

Mr. H. Goss exhibited, for Mr. W. Borrer, Jun., of Hurstpierpoint, a photograph of a portion of a nest of *Vespa vulgaris* which had been built with the object of concealing the entrance thereto and protecting the whole nest from observation. He also read notes on the subject, which had been communicated to him by Mr. Borrer.

The Hon. Walter Rothschild communicated a paper, entitled, "Notes on a Collection of *Lepidoptera* made by Mr. Wm. Doherty in Southern Celebes during August and September, 1891." He also sent for examination the types of the new species described therein.

Dr. Sharp read a paper, entitled, "On the Eggs of an Hemipterous Insect of the Family *Reduviidæ*." Mr. Poulton and Mr. Hampson made some remarks on the subject.—H. GOSS and W. W. FOWLER, *Hon. Secs.*

OUR RUSH-FEEDING *COLEOPHORE*.

BY JOHN H. WOOD, M.B.

(Concluded from page 122).

C. MURINIPENNELLA.

Exp. al., $5\frac{1}{2}$ —6 lin. Fore-wings grey, streaked with fine white lines, that run the whole length of the wing; costal margin edged by one of these lines. Fringe at apex of costa grey, tipped with white along the free edge. Antennæ white, annulated with dark grey quite up to the tips.

It is a rather large insect. The antennæ have a dark appearance from the breadth of the annulations, which go completely round and not only half way as in *alticolella*. The only other of the group I am acquainted with that has very similar antennæ is *adjunctella*; but from this it may readily be distinguished by the white lines in the wings. From *alticolella*, whose wings are also streaked but not so distinctly, it may be known by its larger size and the absence of any shade of yellow, as well as by the difference of the antennæ. It is, perhaps, the earliest of all upon the wing, but much depends upon the site. This year I found it swarming in a sunny field under the Malverns as early as May 12th, but in my own locality at home, a high spot with a north aspect, I did not meet with it until the 30th, when it was in good order, and certainly had not been out many days, for I had been watching for it pretty assiduously; whilst, at Haugh Wood, where the insect is scarce and evidently out of its element inhabiting a wood, I saw it ovipositing on *Luzula multiflora* on June 3rd.

Larva, pale reddish-brown, or flesh-coloured, almost white on the thoracic segments. Head blackish-brown. Plates all black. The full number of dorsal subplates on 3rd present, but only the anterior pair on 4th. Thus, compared with *alticolella*, the general colour is paler, but the plates darker. It feeds on *Luzula campestris* and *multiflora*. The cases may be found in July, and continue on the rushes till about the end of September.

I allowed the opportunity to pass without ascertaining the precise age of the larva when it begins its case-life, but as the cases on their first appearance are about the size of those of *glaucicolella*, and as the latter is in its antipenultimate skin when it commences building, it may be concluded that *murinipennella* is also of the same age at this turning point in its existence. Hence, it takes to a case one moult earlier than *alticolella*. The case is at first white, semitransparent, and dusted, as seems to be the rule with all of them, with minute particles from the interior of the capsule. As it gets bigger, it becomes opaque and ochreous, except along a narrow line on the under-side that remains of the original white colour, and the meaning of which I shall explain when treating of *glaucicolella*. In general appearance the full-sized case is very like the full-grown case of *caspititiella*, only it is rather longer and narrower; hence it has a more slender look, and its colour besides is brownish-ochreous, not white or whitish-ochreous, as in *caspititiella*.

As it was impossible to apply the name of *murinipennella* to any of these species without doing violence either to what had been written previously about the perfect insect, or about the larva, I referred the matter to Mr. Stainton, and have been guided by his decision. After most kindly examining all my material, he wrote about this insect, "This is my idea about *murinipennella*, the most distinctly streaked of the group;" and he added, "I had already more than suspected the case figured in Nat. Hist. Tin. as that of *murinipennella* did not really belong to the moth figured."

C. CÆSPITITIELLA.

Exp. al., 5—5½ lin. Fore-wings shining grey, or ochreous-grey, unstreaked; costa conspicuously white, fading gradually into the greyish-ochreous fringe at the apex. Antennæ annulated with grey on the inner face, the outer face and tip entirely white. A paler and more ochreous form occurs, in which a few short and dark, but obscure, dashes run into the apical half of the costa, conveying the impression that a part of the grey element had crystalized out, as it were, along these lines, and had left the rest of the wing paler and more ochreous. In the type, the grey uniformly-coloured fore-wings and the clear white costa give it some resemblance to *adjunctella*, but besides being darker, the latter has the wings broader and browner, and the antennæ completely annulated.

It is usually fully out by the middle of June, and lingers on in greatly reduced numbers till about the middle of July. It is, perhaps, the most abundant and widely distributed of the species. With me it is almost exclusively an inhabitant of wettish woods, for the reason that its favourite food here, namely, *J. conglomeratus* and *effusus*, are only found in any quantity in such places, but on the western side of the county I meet with it on open moorland about 1800 feet or more above the sea, where it flies among *J. conglomeratus* and *squarrosus*. At one time I could scarcely believe that this *squarrosus* insect could be the same species, but except that the few specimens I have reared of it are a little darker than the type, I can discover no other difference, and as neither the caudal apparatus nor the larvæ and their cases lend any countenance to its distinctness, the idea had to be relinquished. I may add, that through the kindness of Mr. Bankes I have been able to examine a long series bred by that gentleman from the same plant, and his specimens, too, seem also a little darker than usual, whilst amongst them is not a single instance of the pale ochreous form.

Larva, yellowish-brown, or mahogany coloured. Head black. Plates black or blackish. Both pair of dorsal sub-plates present on 3rd, but no trace of either on 4th. The spiracular plate on 4th is also unusually small, being barely one-fourth the size of the one on 2nd. There is frequently a small, dull, blackish spot on the

hinder part of the back of 12th segment ; it is not always present, nor equally distinct when present ; it is not a plate, and disappears along with the loss of colour that takes place during the latter weeks of hibernation, whereas the plates at that time show up more clearly by contrast.

The figure in Nat. Hist. Tin. shows four faint grey marks on the back of 4th, where the plates should be found. They are not, however, true plates, but only slight grey stainings of the skin, of very uncertain occurrence, and are always lost, I believe, before the larva has done feeding. The absence of the dorsal plates on 4th, and the presence of the dark mark on 12th, are important points, for they are the distinguishing characters of this larva. It becomes full-fed in the autumn, when it leaves the rush-heads, and hides away in the surrounding vegetation. Its favourite foods here are *J. conglomeratus* and *effusus*. I have also found it on *lamprocarpus* (not commonly), on *squarrosus*, as already stated (freely), and on *glaucus* (rarely). It is, no doubt, because the last named rush is distasteful to it, and at the same time monopolizes the fields and lanes in these parts to the exclusion of *conglomeratus* and *effusus*, that *cæspititiella* is driven in my district into the woods. Mr. Bankes has sent it me on *J. compressus*, and Mr. Fletcher on *acutiflorus* ; and probably it feeds on other kinds as well.

The case is so well known that it would be superfluous to describe it, yet there may be room for a few remarks on the mode of its construction. In the first place, the larva is later than any of its fellows in beginning its case. I have not, however, ascertained the precise date, and am inclined to think that the larva is bound by no hard and fast rule in the matter, but sometimes sets about it just before the last moult, and sometimes not till after that event. As this would be an exception to the general law that a change in the habit or economy of a larva, or even any definite act performed by it, such as exchanging a small case for a larger one, coincides with a definite point in its age, it is possible that further observation may show that the above conclusion is incorrect. But be this as it may, the larva is long past its babyhood when it begins to build. The case makes its first appearance as a short and stout cylindrical tube, projecting through the gap in the capsule, caused by the natural dehiscence of the valves, or else through an artificial opening cut by the larva itself. It is thin and flimsy, semitransparent, and covered with minute brown fragments of vegetable *débris*, and has the outer or anal end blunt and rounded, and, strange to say, closed. After some delay, the tail end is gradually built out, a triquetrous shape

being given to it, and the terminal valves added, until the form and almost the size of the mature case are reached. The anal end, however, still remains closed, and the walls thin and weak, and though the case can afford a fairly serviceable covering if the larva be obliged to move, yet the latter usually prefers to keep it fixed to the old moorings, whilst he himself goes in search of food within the rush-head, which is now riddled and honeycombed by the family burrowings. That he sometimes comes to grief in these excursions, or fails to find his way back again and has to build afresh, seems warranted by the fact that empty cases are not unfrequently left stranded on the rush-heads long after the full ones have been carried off by their owners into winter quarters. Many of these empty cases are of full size, but whiter than they should be, and invariably have the anal orifice closed. The last step in the process of manufacture is the permanent unsealing of the anal orifice, and the strengthening of the walls, not, I think, by further spinning, but by the infiltration of some more liquid material, which, like the size of the calico-manufacturer, effectually stiffens them, and at the same time changes their colour from white to pale ochreous or buff. As for the origin of the stiffening material: it is not reasonable to suppose that the same gland can supply one kind of product at one time and quite a different kind another, so that we must look elsewhere than to the silk gland for its source. Now, it seems to me, for reasons I need not enter into, highly probable that this source is the so-called salivary glands, and I would suggest that the function of these organs is not to aid in digestion, as is commonly supposed, but is rather connected with the above phase of larval economy.* The case being now complete, the larva henceforth, I believe, resides permanently within it.

C. GLAUCICOLELLA.

Exp. al., 5—5½ lin. Fore-wings shining greyish-ochreous, unstreaked, though frequently with a few (generally four) obscure dark dashes running into the apical half of the costa. Costa conspicuously white, shading gradually into the whitish-ochreous fringe at the apex. Antennæ annulated with grey on the inner face, the outer face and tip entirely white; occasionally in the ♀ both faces are white.

* These glands appear to be present in most, if not all, the insect orders, and I venture to think that their office is in every instance connected with some process or other external to the body. Thus, I believe these glands in the *Hemiptera* instil an irritating fluid into the puncture made by the proboscis in the leaf or other living structure, and so bring an increased flow of sap to the spot. Again, the pain and swelling caused by the bite of gnats, &c., are clear proof that they introduce some irritant or poison, and what more likely than that it is the product of these glands. Then we know that bees and wasps make use of an adhesive fluid for working up the material of their nests, or for kneading the excavated soil that it may be more easily carried away, and I doubt not that in their case also this substance is secreted by the so-called salivary glands.

It is extremely like *cæspititiella*, and is doubtless mixed up with it in most collections, but it is a paler looking and more decidedly ochreous insect, and the dark apical dashes which are quite the exception in *cæspititiella* are, I think, the rule in *glaucicolella*. It makes its appearance considerably later than *cæspititiella*, not being fully out before about the middle of July, and it continues on the wing till the middle of August. It flies in fields and lanes, and more rarely in woods.

The larva is of much the same shade of mahogany colour as *cæspititiella*, or for the matter of that, as *alticolella*, any difference that may be thought to be present, on comparison, being due to the relative distance of the specimens from full growth, for immature specimens of all three are rather reddish-brown than yellowish-brown. The head and plates are black or blackish. The posterior pair of subplates are absent on 4th, but the anterior pair are present, though faint, whereas they are quite absent in *cæspititiella*; the spiracular plate on 4th is also much larger than in *cæspititiella*, being nearly as large as the one on 2nd, and no trace of any dark mark exists on the back of 12th.

The larvæ make their appearance at intervals through the autumn, and are of very different sizes when the cold weather sets in and stops their feeding. Some are quite small, and of these many still stay on the panicles, hiding themselves among the seeds; others are apparently full grown, and hibernate lower down and out of sight amongst the stalks; all, however, great and small, wake up again in the early spring and complete their development upon what is left of last year's seeds. Of all the rushes with which I am acquainted *glaucus* is the best at holding its seeds to a late date, many of the capsules retaining the greater part of their contents until the following May, or even June. It is not surprising then that *J. glaucus* is essentially, so far as my experience goes, the favourite food of this insect, although it may also be found on *conglomeratus*, *effusus*, *lamprocarpus*, and at times, so Mr. Fletcher informs me, on *acutiflorus*.

The full-sized case is not to be distinguished from that of *cæspititiella*, and has no doubt been mistaken for it over and over again, and always certainly so, if the search has been deferred until very late in the autumn, or until the following spring, for at these times *cæspititiella* is either in hiding or laid up for pupation, leaving the rushes in possession of its ally. There is, however, one important difference between them: *cæspititiella*, as I have shown, does without a case until somewhere about the period of its last moult; *glaucicolella*, on the other hand, takes to a case whilst in the antipenultimate skin, that is, with two moults still to pass. Hence there is no such thing as a really small and perfect case of *cæspititiella*, whereas, in *glaucicolella*

perfect cases are of all sizes, from very tiny ones of barely more than one line's length up to the full measurement of three lines. The cases are at first white and semitransparent, and so like miniature cases of *cæspititiella* in their early stage, that we may conclude they are formed in much the same way, but they soon get strengthened by the stiffening material, and acquire a slight ochreous or buff tint. Specimens, both large and small, will often be noticed having a white margin to the valves of the anal end, and a seam of the same colour the whole way down the centre of the under-side, indicating that the case has recently been enlarged, for these white portions are the lines upon which the growth of the case takes place. Increased length is obtained by simple additions to the tail end, but to provide for greater width the larva cuts open the case along the ventral side from end to end, and then having added the necessary increment, closes it up again, though probably in the actual performance the addition and the closure are practically one and the same act. I was once so fortunate as to catch a larva just as it had slit the case open in this way, and on other occasions I have dropped upon it at different stages in the process of closing it up again, these only differing by the amount of cross-spinning that had taken place.

I have reserved the consideration of their anatomy to the last. The figures represent the ventral portion of the 8th segment, with the genital aperture in the female of each of the five species. In the *Lepidoptera*, and still more in some other classes of insects, we have long learnt to take advantage of the curious fact, that great structural differences in the terminal segments of the male are often found to occur in species otherwise extremely alike, but perhaps the attempt has seldom before been made to show, that in the corresponding parts of the other sex also we may readily obtain, without any complicated dissection, excellent and trustworthy characters, where the ordinary superficial ones are barely sufficient for our purpose. How far a thorough study of these parts might repay the systematist it would be difficult to say, but that the chief gain would be in the discrimination of species rather than in the arrangement of genera and families is perhaps to be expected, when the extreme readiness of the parts to change their form and their extravagant manner of doing it are taken into consideration.

Looking at the figures it will be noticed that the outline of the outer end of the ventral plate is much alike in *sylvaticella*, *alticolella* and *murinipennella*. There is a deep smooth cut notch in the centre,

whilst the wavy margins slope away in a curve to the dorsal aspect. In *cæspititiella* and *glaucicolella* the notch is much shallower, and the margins pass off horizontally; in *glaucicolella* the notch is particularly small and shallow, and occasionally is absent altogether. It is, perhaps, scarcely necessary to add, in passing, that a tendency to vary within certain limits is met with in these anatomical features just as in any other class of characters, without affecting in the one case more than the other their general importance. *dd* are curious little pockets at the outer corners of what we may call the vestibule of the genital aperture; they are very perfect in *sylvaticella*, rudimentary in *alticolella*, *cæspititiella* and *glaucicolella*, and quite obsolete in *alticolella*. *ee* appear also to be pockets, situated at the upper end of the external portion of the canal leading to the bursa copulatrix; they are present in *sylvaticella*, *alticolella* and *murinipennella*, but no trace of them, so far as I can see, is to be found in *cæspititiella* and *glaucicolella*. It will be noticed that *sylvaticella* and *alticolella* agree in the length of the external portion (*b*) of the canal, which, in their case, reaches back some distance beyond the inner edge of the segment, and also in the possession of the inner pair of pockets (*ee*); *cæspititiella* and *glaucicolella*, on the other hand, have short external canals, and want the pockets *ee*; whilst *murinipennella* holds an intermediate position, having the short canal of the one and the inner pockets of the other.

Sylvaticella, *alticolella* and *murinipennella* are so palpably distinct, that the figures may now be left to speak for themselves; but *cæspititiella* and *glaucicolella* do not stand on quite so good a footing, for the parts exhibit something of the same closeness of relationship which was found in the superficial characters of the moths and in their cases and larvæ, and some further remarks seem, therefore, called for. In the first place, the external canal (*b*) is reduced in *glaucicolella* to the very shortest dimensions. Next we shall observe that the ridges running down from the corner of the "aperture" reach quite to the notch in *glaucicolella*, but stop well short of it in *cæspititiella*. Then these ridges are not nearly so prominent in *glaucicolella* (a point which the figure can only imperfectly show), and in some specimens they even subside altogether about the middle of their course, springing up again where the rudimentary pockets (*dd*) come in. Another distinction occurs on the dorsal surface of the segment. In *cæspititiella* a prominent dark brown ridge or backbone runs straight down the middle from end to end; the sole trace of it in the other is a slight and inconspicuous thickening at the inner end, that only extends for about a fourth of the distance. The ovipositor or 9th

segment also affords a valuable character. In *cæspititiella* it is particularly stiff and rigid, the chitinous or skeletal portion being well developed, both as regards thickness and surface extent, whilst in *glaucicolella* it is reduced to a mere strip of the thinnest material, and is so weak that it can be bent and distorted with great ease by pulling on the visceral tube. The difference in their comparative rigidity is interesting, when we bear in mind that the former lays her eggs for the most part in the early summer when the rush flowers are only just opening, and must consequently offer much resistance to the entrance of the ovipositor, whereas, the latter performs the act much later when the flowers have long been out and become easy of access.

Enough has now been said to establish beyond dispute the distinctness of the two species, but were further evidence needed, it could be found in the inner portion of the canal leading to the bursa copulatrix. The organ is of great length, and highly complicated in all the species, but in *glaucicolella* its length is simply extraordinary, and it has besides differences of structure that separate it at once from *cæspititiella* or any of the others.

EXPLANATION OF PLATE IV.

a is the genital aperture.

b is the external portion of the canal leading to the bursa copulatrix.

c is the commencement of the inner portion of the same canal.

d d are the external pockets.

e e are the internal pockets.

Tarrington, Ledbury : 1892.

A NEW SPECIES OF CYNIPIDÆ

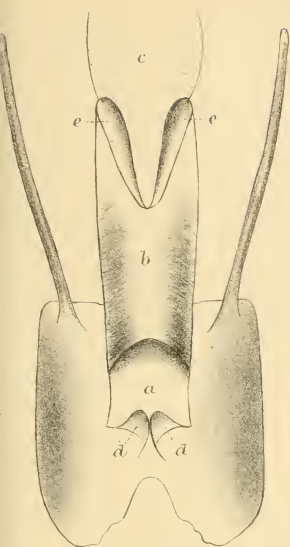
BY G. C. BIGNELL, F.E.S.

SPATHEGASTER PUNCTATUS, *sp. n.*

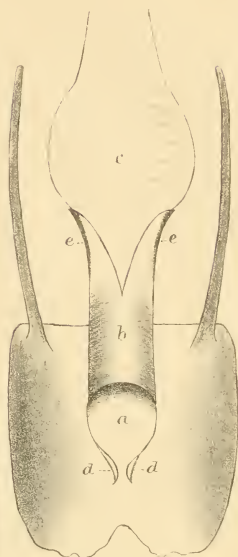
Black, legs flavous, upper-side of hind coxæ, antennæ, except the first two or three joints, which are lighter, fuscous. Eyes not so large nor so prominent as those of *baccarum*. Thorax : the mesonotum trilobate, with deep furrows continued to the scutellum, middle lobe (which is sharply defined) smooth and shining, except near the scutellum, where the punctures are very shallow, the sides closely punctured. Wings hyaline.

At first sight it has all the appearance of *Spathegaster baccarum*, but when carefully examined the sculpture of the thorax separates it from that species, and the wings are free from fuscous clouds.

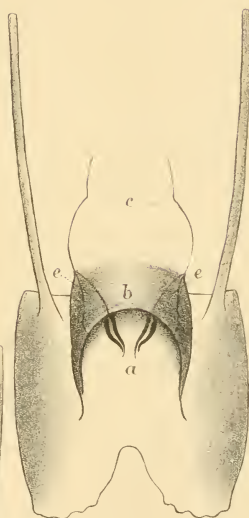
In *baccarum* the mesosternum is separated from the mesonotum



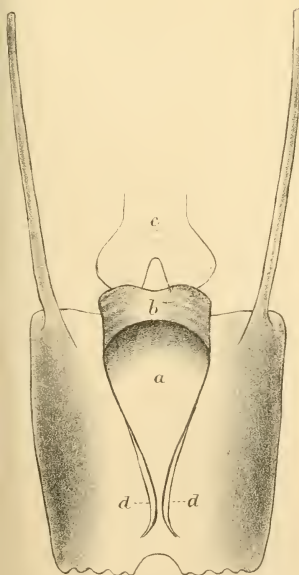
C. sylvaticella.



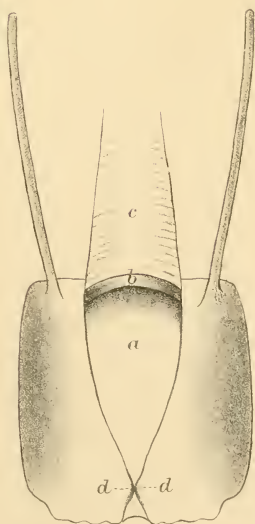
C. alticolella.



C. murinipennella.



C. caespitiliella.



C. glaucicolella.

by a raised rounded ridge, much more prominent than that of the species now described, and the furrows on the mesonotum are much shallower and shorter.

This gall-fly I obtained in June, 1885, out of a bud of the oak. No gall could be seen, and it was not, until this year (1892), examined by Mr. Cameron, who, after careful search, cannot find any description of a fly from an unexpanded bud.

7, Clarence Place,

Stonehouse, Devon :

June 18th, 1892.

ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

(Continued from page 153).

35.—FRONTINA, Mgn.

Gen. ch.—Head large, somewhat swollen and vesicular; eyes nude; frontalia wide and of nearly the same width in both sexes; facialia ciliated with strong bristles fully half way up; antennæ long, the second joint short, but the third mostly six times longer; arista bare; abdomen ovoid, with or without discal setæ on the middle rings; wings without cubital appendix, having the fourth vein bent at an angle, and the first posterior cell a little open, terminating near the apex of the wing.

- | | | | |
|---|-----|----------------------|----------------------------|
| 1 | (2) | Abdomen yellow | 1. <i>læta</i> , Wdm. |
| 2 | (1) | Abdomen black..... | 2. <i>nigricans</i> , Egg. |

F. *LÆTA*, Wdm.

T. lætabilis, Ztt.

Frontalia of nearly equal widths in both sexes, central stripe rufous, of about the same width as the sides, which are of a golden-yellow colour; face oblique, whitish-yellow; cheeks bare; facialia strongly but not thickly ciliated nearly to the top; fronto-orbital bristles partly double in both sexes, extending a little below the root of the arista, rather lower in the male than the female; antennæ with the first, second, and basal half of the third joints yellow, the lower part of the third joint (which is six or seven times longer than the second) being grey; arista thickened rather beyond the middle; palpi yellow; thorax and scutellum covered with golden-yellow pubescence, the former marked by two narrow central stripes, and having two little, detached, narrow, oblong spots on each side; the post-sutural outer dorso-central bristles four in number; abdomen yellow and translucent with white reflections, and having a rather indistinct black dorsal band, more marked and wider in the male than female; the third segment has the posterior margin black; both

discal and marginal setæ are present ; wings yellow, first posterior cell partly open ; legs grey, with upper surfaces of the femora and tarsi black, and tibiæ ferruginous ; the legs are paler in the female than in the male. Very rare.

F. NIGRICANS, Egg.

Black and glabrous ; frontal stripe piceous, about as wide as the sides of the frontalia, which are rough and vesicular, of a grey colour, with black reflections ; fronto-orbital setæ large, and reaching to the end of the second antennal joint ; cheeks white, with dark reflections, and ciliated with a row of small hairs, which extend half way down the face ; facial setæ long and strong, extending more than half way up the face ; vibrissæ large ; antennæ grey, with the third joint thick, and from five to six times longer than the second ; arista thickened to the middle ; palpi black ; thorax black and shining, the front margin, with the shoulders and sides being clothed with white pubescence, it is marked by four longitudinal black stripes, the middle pair being narrow, and the outer ones wide ; there are four post-sutural outer dorso-central bristles ; scutellum black, with the apex sometimes rufous ; metathorax light grey ; abdomen black, glabrous, and spinose, with setæ both on the disc and margin of the segments, and having a band of white reflections on the front margins of the last three rings, which is complete on the second ring, but only marked on the sides of the others ; legs black. Very rare ; I have only seen one example, which I captured at Windermere, in June, 1884.

Schiner refers the *Fabricia pacta*, of Meigen, to this genus, and states that *Frontina austera*, of the same author, is only the female of the same species. I have a continental specimen of *F. austera*, which possesses the characters peculiar to the genus *Frontina*, but those described by Meigen and Walker as belonging to *F. pacta* are so different (the frontalia of the male being narrow, and the antennæ shortened), that I think the two flies cannot be referred to the same genus, or belong to the same species.

37.—BAUMHAUERIA, Mgn.

Gen. ch.—Head large ; eyes small and nude ; frontalia very wide, and with the face somewhat swollen ; cheeks sometimes hairy ; antennæ long, the third joint being fully six times as long as the second ; facialia ciliated ; wings with the first posterior cell closed at the apex, or, a little, before it.

This genus bears such a close affinity to the former, that I have placed them in juxtaposition, out of their proper order in my list ; their characters are so much alike that it is difficult to know in which to place certain species, thus, *F. læta* is sometimes called a *Baumhaueria*, and *B. marmorata* a *Frontina* : the typical species of the former genus is *B. goniatiformis*, Mgn., in which the first posterior cell is quite closed, and has a short stalk, it has not, however, been found in Britain

B. MARMORATA, F.

T. vertiginosa, Mgn.

Frontal stripe rufous or flavescent, much narrower than the sides of the fron-

talia, which are very wide, swollen, white, with grey reflections, and armed with fronto-orbital bristles in a triple row; cheeks large, glistening white, and bare; antennæ very long, with the first and second joints rufous, and the third grey, and nearly eight times as long as the second; arista thickened nearly to the end; palpi yellow; facialia ciliated for two-thirds of the way up; thorax greyish-white, marked with four stripes (the outer pair being maculiform), and with numerous little black spots, upon which the bristles are seated; post-sutural outer dorso-central setæ three in number; scutellum grey, with the apex mostly rufous; abdomen white, tessellated with numerous black spots and patches; and having setæ both on the disc and edges of the segments; wings with the apical cross veins curved, and having the first posterior cell closed at the apex, or, sometimes, slightly open; legs grey. I have adopted the Fabrician name, as it has the priority, and is very characteristic. Not uncommon; I have several specimens bred from *Arctia Caja*.

35A.—DESVOIDIA, *g. n.*

Gen. ch.—Eyes nude and small; forehead projecting, facial angle very oblique; frontalia wide, occupying nearly half the head in the female; cheeks and chin large, former bare; fronto-orbital bristles extending to root of arista; antennæ long, with second joint short, and third fully six times as long as second; arista short, bare, and thickened nearly to the end; abdomen with both discal and marginal setæ; wings with fourth vein bent at an angle, and without appendix; first posterior cell ending some way before the apex, and outer transverse vein in the centre between the inner cross vein and the angle of the fourth.

This genus is closely allied to *Metopia*, but has the following distinctions: the facial setæ only extend half way up the face; the abdomen has discal setæ; the wings are without cubital appendices, and the outer cross vein is placed centrally between the inner vein and the angle of the fourth.

D. FUSCA, *sp. n.*

Metopia biserialis, Mcq. ?

Frontal stripe broad, wider than sides, piceous in front but pale behind; sides dull grey; fronto-orbital bristles numerous, in a double and partly treble row; face yellowish-white, with dark reflections; third joint of the antennæ stout; arista shorter than the antennæ, thickened and slightly increasing in thickness nearly to the end, where it narrows suddenly, and terminates in a short fine point; palpi black; thorax covered with yellowish-brown tomentum, and marked with four rather indistinct stripes; there are three outer dorso-central bristles behind the transverse suture, and two in front of it; scutellum brownish-grey; alulets large, white, and with a yellow border; wings a little nebulous, having the fourth vein bent at an angle, the apical cross vein a little curved, and the outer cross vein straight and oblique; abdomen brownish-black and shining, with a cinereous band round the

front margins of the second and third segments, the former being quite straight and narrow, the latter one widening in the centre, so as to cover the middle of the dorsum of the segment; there are two marginal setæ in the centre of the first segment, two near the margin of the second, as well as two on the middle of the disc; there are two again on the disc of the third segment, as well as several on the sides, with two in the middle of the posterior margin; legs black, and very spinose, with the outer sides of the hind tibiæ irregularly ciliated. Length, about 5 mm.

This species, by its characters, closely resembles those given by Macquart of his *Metopia biserialis*; it differs, however, by the position of the outer cross vein, which, in *M. biserialis*, is said to be one-third nearer to the bend of the fourth vein than to the inner cross one. It is also nearly allied to the *M. convexinervis* of the same author, which is likewise an aberrant species of *Metopia*.

A female of this little fly was found by Mr. C. W. Dale, at Glanvilles Wootton, Dorset, on April 6th, 1892.

35B.—DEGEERIA, Mgn.

Gen. ch.—Eyes nude; forehead slightly prominent; facial angle a little oblique; frontalia narrow in the male, but moderately wide in the female; fronto-orbital bristles extending to about the root of the arista; facial setæ ascending half or more than half way up the facialia; antennæ with the third joint from three to six times longer than the second; arista sometimes pubescent; cheeks bare; abdomen usually with both discal and marginal setæ; wings with fourth vein mostly bent in a curve, and outer cross vein placed midway between the inner one and the bend of the fourth; first posterior cell ending near the tip of the wing.

- | | | |
|----------|---|--------------------------------|
| 1 (8) | Palpi black. | |
| 2 (3) | Thorax glistening white, in front of the transverse suture... | 1. <i>collaris</i> , Fln. |
| 3 (2) | Thorax with the shoulders, or front margin only, white. | |
| 4 (5)(6) | Thorax marked with two black lines | 2. <i>blanda</i> , Fln. |
| 5 (4)(6) | Thorax unstriped | 3. <i>pulchella</i> , Mgn. |
| 6 (5)(4) | Thorax with four distinct stripes | 4. <i>grandicornis</i> , Zett. |
| 7 (6) | Thorax with four short and almost confluent stripes | 5. <i>pygmæa</i> , Mcq. |
| 8 (1) | Palpi pale..... | 6. <i>muscaria</i> , Fln. |

D. COLLARIS, Fln.

ornata, Mgn.

Frontal stripe black, rather wider than sides of frontalia, which, like the cheeks, are glistening white, with dark reflections; antennæ grey; arista long, slender, slightly pubescent, and thickened along its basal third; facialia ciliated most of the way up; palpi black; thorax shining black, clothed in front as far as the transverse suture with snow-white pubescence, and marked on the anterior margin with four short black lines, which are often partly confluent; in the female the hinder half has a grey shine or reflection; there are three post-sutural outer dorso-central setæ; scutellum black; halteres yellow; abdomen oblongo-conical, bright black, with in-

interrupted white fasciæ on the sides and front margins of the rings, which have also both discal and marginal setæ; wings with apical cross vein nearly straight and curved at the bend, outer cross vein straight, fifth vein sometimes abruptly shortened a little before reaching the margin of the wing, when the specimen has been looked upon as a distinct species from *D. ornata*, Mgn., in which the vein extends for its full length; legs black. Not common; in the Rev. E. N. Bloomfield's, Mr. Dale's, and Mr. Billups's collections.

D. BLANDA, Flh.

Eyes rather widely separated, frontal stripe black or brown, rather narrower than the sides of frontalia, which are white with black reflections; face and cheeks silvery-white; antennæ long, third joint nearly six times as long as the second; arista thickened to about the middle; facialia ciliated about half way up; palpi black; thorax shining black, with three glistening white stripes, the middle one shortened, thus leaving two black bands; post-sutural outer dorso-central setæ three in number; abdomen shining black, with a narrow white continuous band on the front margin of the second, third, and fourth segments, which have both discal and marginal setæ; wings with apical cross vein straight and curved at the base; legs black, with the fore tarsal joints dilated in the female. This well marked species, which varies a good deal in size, is rare; I have only seen one British specimen, which I captured at Windermere in June, 1884.

D. PULCHELLA, Mgn.

minima, Mcq.?

Sides of frontalia glistening black in the female; eyes of male approximated; face glistening white; antennæ with third joint three to four times as long as the second; arista thickened nearly to the middle; palpi black; thorax shining black, unstriped, with shoulders a little grey; abdomen bright black, elongated and narrow in the male, with slight white reflections on the sides, and a very slender pale grey band round the front edges of the second, third, and fourth segments, which have both discal and marginal setæ; wings and scales brown in the male; the former with the apical cross vein rather oblique, straight, and curved at the base; legs black.

D. minima, Mcq., is described as having the arista only thickened along its basal third, instead of to about half its length, and also as being much smaller than *D. pulchella*, otherwise they are very similar; the question of size is of no importance, it is so variable in many of the *Tachiniidæ*, so I believe they are only varieties of the same species. Rare; both forms are in Mr. Dale's collection, and were captured at Glanvilles Wootton.

D. GRANDICORNIS, Zett.

Frontalia wide in the female, middle stripe piceous, and wider than the sides; antennæ with third joint long and thick; arista thickened to beyond the middle; palpi black; thorax shining black, with white reflections in front, and marked by four black stripes; abdomen conical, black, and glabrous, with a narrow white band round the front margin of the second, third, and fourth segments; wings with the fourth vein bent at an angle, outer cross vein sinuous, and fifth vein not quite reaching the margin of the wing. This rare species is in the Rev. E. N. Bloomfield's collection. Only the female is known, which closely resembles that of *D. collaris*,

but differs by having the fourth vein bent at an angle instead of a curve, by the outer cross vein being sinuous, and by the white fasciæ on the abdomen being narrower.

D. PYGMÆA, Mcq.

Frontalia narrow in the male; central stripe piceous, and rather wider than sides; cheeks white, with dark reflections; antennæ with third joint between three and four times longer than second; arista with basal third thickened; facialia ciliated rather more than half way up; palpi black; thorax black, grey in front, where it is marked with four short stripes, almost confluent; post-sutural outer dorso-central bristles three in number; abdomen dull grey, with an undulating black mark on the second and third segments, forming three sub-triangular confluent spots; discal and marginal setæ both present; wings and scales rather nebulous, the former with apical cross vein straight, and bent at the base in an obtuse angle; legs black, hind tibiæ thickly, but not quite evenly, ciliated on their outer sides. Rare; in Mr. Dale's collection; captured at Glanvilles Wootton. Only the male is known.

D. MUSCARIA, Fln.

Frontal stripe black, equal in width to the sides of the frontalia, which are white, with dark reflections; antennæ with third joint only about three times the length of the second; arista thickened nearly to the middle; palpi yellow or testaceous; facial setæ not extending higher than the middle of the face; thorax cinereous, with four black stripes, which are often partly confluent; post-sutural outer dorso-central bristles three in number; wings with apical cross vein nearly straight, and bent at the base in a curve; legs black. Rare; in Mr. Dale's collection, found at Glanvilles Wootton, and I have a specimen in my own, which was given me by the Rev. E. N. Bloomfield, captured at Guestling, Hastings.

(To be continued). 210

PHILOPOTAMUS MONTANUS, DONOV., VAR. *CHRYOPTERUS*, MORTON, IN THE WEST OF ENGLAND, WITH NOTES ON THE NEURATION.

BY ROBERT McLACHLAN, F.R.S., &c.

This variety was first described by Mr. Morton in the Ent. Mo. Mag., vol. xx, p. 273 (1884), and subsequently by myself in the "First Additional Supplement," p. 47, from examples taken by Mr. Morton on a hill called "Tinto," in Clydesdale. My friend, Mr. E. Saunders, has just given me three examples taken by him at Ilfracombe in May of this year, which should, I think, be referred to this variety. In colour, especially of the hind-wings, they are even brighter than the typical Scotch examples (but these latter are now somewhat faded).

In the original descriptions stress is laid on the fact that the apical fork No. 4 *has a footstalk*. In one of the Ilfracombe examples this fork has a very short footstalk, in the others it is *sessile*.

Mr. Morton recently examined examples taken by me at Exmoor, in the autumn of 1890, and these also appear to be the var. *chrysopterus*, but scarcely so bright as the Scotch, and much less bright than the Ilfracombe specimens. In these, the condition of the 4th apical fork is variable.

I am thus inclined to consider the West of England examples, here referred to, as the var. *chrysopterus*.

In describing the var. *cesareus*, McLach., from Jersey, I stated that the apical fork No. 4 is sessile. On examining a large number of specimens taken in 1891, several prove to have this fork distinctly, if only shortly, stalked. The neural structure in this respect is certainly variable, and, perhaps, of secondary importance to colour and markings. The anal structure remains the same throughout.

Lewisham, London :

June 4th, 1892.

A NEW *ICERYA*,
AND SOME OTHER NEW *COCCIDS* FROM AUSTRALIA.

BY W. M. MASKELL, F.R.M.S.

Mr. Albert Koebele, an officer of the United States Department of Agriculture, is at present making a second tour in Australasia, with the object of discovering, if possible, parasitic enemies to some of the *Coccids*, which are so abundant in America. The splendid results of his first journey in 1888, and the wonderful success which followed his discovery of *Vedalia cardinalis*, and its effects on the "Fluted Scale," have encouraged his Department to make this second effort, and I am sure that the best wishes of fruit-growers and of entomologists in all countries will go with him in his attempt: for, whatever may be the advantages of the application by man of even the best remedies against insect pests, the employment of the "natural enemy" must always be far superior and more effective.

Mr. Koebele has very kindly supplied me at intervals during his journey with specimens of various *Coccids*, and I have been able to identify for him, so far, about thirty species, from the Sandwich Islands, from Samoa, and from various parts of Australia. Amongst these, a few, such as *Parlatoria Proteus* (Queensland), *Lecanium tessellatum* (New South Wales), *Lecanium filicum* (Victoria), are known elsewhere; a species from Honolulu is so like *Lecanium depressum*, that it is probably only a variety of that species; a very large and peculiar pinkish *Ceroplastes* (Queensland) is, I think, probably *C.*

myricæ, Linn., an insect originally from the Cape of Good Hope, and apparently scarcely at all known up to the present; and most of the remainder are probably new species, which I hope to describe during the current year.

Amongst these new insects is one which deserves, I think, a special notice at present. It belongs to the genus *Icerya*, and in many of its characters it very closely resembles the well-known *Icerya Purchasi*. I have received specimens of the adult female (two of which have hatched out several larvæ), of the second stage of the female, and the adult male. In size, these are all much smaller than *I. Purchasi*, the dimensions being: the larva, $\frac{1}{30}$ -inch; the adult female, $\frac{1}{10}$ -inch; the adult male, $\frac{1}{15}$ -inch. The minute anatomical characters are not so easily defined, and I leave them for the present. But the distinguishing feature is that, from the central region of the dorsum, in the adult female, there springs a rather thick pencil of cottony fibres, white or slightly tinged with yellow, and protruding in the specimens observed about $\frac{1}{15}$ -inch. This is a very peculiar feature, not seen in any other *Coccid* that I know of. I have vainly endeavoured to make out an orifice in the dorsal epidermis from which this pencil could emerge; the insect's body is covered with short black hairs and with circular compound spinneret orifices, but I fail to see that there are any special ones at that particular spot. Nor is it easy to see what can be the use of the pencil: for there is (as usual in the genus) a posterior cottony ovisac, in which the eggs are laid and the larvæ hatched; the pencil can, therefore, not have any generative function. The ovisac, it should be remarked, is much smaller, proportionately, than that of *I. Purchasi*, extending scarcely beyond the abdominal extremity.

I propose to attach to this curious form the name of *Icerya Koebelei*. My friend informs me that the insect seems to be somewhat rare; he has only been able to furnish me with some half a dozen specimens of the adults; but I think that these are sufficiently clearly distinct to permit me to consider them as a new species. The food-plant appears to be usually some kind of *Acacia*.

Wellington, N. Z.: April, 1892.

NOTES ON SOME *LYCÆNIDÆ* FROM WEST AFRICA.

BY HAMILTON H. DRUCE, F.E.S.

The following observations are suggested to me by a careful perusal of some descriptions published by Dr. Staudinger in the "Iris," part i, July, 1891:—

Iolaus (= *Argiolaus*) *julianus*, Staud. (p. 144, pl. i, fig. 2) is the insect I referred to on p. 146 of the *Ann. Mag. Nat. Hist.*, August, 1891, under the name *A. Alcibiades*. Certainly a comparison of Donovan's figure with that of *julianus* seems to suggest considerable differences, but I feel certain that his is not correct in all particulars, no scaly patch being shown or mentioned in the description. Dr. Staudinger compares *julianus* to *Iulus*, Hew., from which it is of course very distinct. However, until better evidence to the contrary is forthcoming, I shall place the specimens before me under Dr. Staudinger's name.

Iolaus (= *Argiolaus*) *julius*, Staud., = *A. lekanion*, mihi, and takes precedence, Dr. Staudinger's description being published in July, 1891, mine in August, 1891; and it is unfortunate that we were both working at the same group, but unknown to each other. I have little doubt that the specimens described on p. 148 (*Iris*, iv) represent another species, although it is just possible that they may turn out to be females of *A. lukabas*, mihi, which is, however, recorded only from the Gambia. Dr. Staudinger is undoubtedly correct in remarking that they cannot be females of *A. Calisto*, as that species has a female which is much whiter than any known ally of *A. Iulus*.

On page 150 (*Iris*, iv) is described *Hypolycæna debilis* as distinct from *H. nobilis* (which I have before shown to be a synonym of *P. barbatus*, mihi). Undoubtedly it is, but, in my opinion, it is also identical with Hewitson's *Deudorix Diyllus*, and should be placed in the genus *Rapala*.

London: May, 1892.

SPECIES CAPSIDARUM ET ANTHOCORIDARUM MADAGASCARIENSES

DESCRIPSIT DR. O. M. REUTER.

MECOMMA MADAGASCARIENSIS, *sp. n.*

Mas. elongatus, niger, nitidus, longius pallido-pubescent; gutta utrinque verticis, rostro pedibusque flavo-ochraceis; hemielytris lividis, clavo commissura apiceque late, corio intra venam cubitalem, angulo anteriore, cunei membranae cum venis brachiali et cubitali nigricantibus, corio extra venam cubitalem, cuneo, angulo interno excepto, areola membranæ minore cum vena connectente limboque laterali externo pallidis, angulis apicalibus corii exteriore et cunei concoloribus.

Long, $4\frac{2}{5}$ mm.

Femina ignota.

M. ambulanti, Fall., speciei palæarcticæ, in omnibus simillima et maxime affinis, differt tamen corio angulo exteriore apicali cuneoque apice concoloribus nec non membrana aliter colorata.

LASIOCHILUS HUMERALIS (Sign).

Syn.: *Xylocoris humeralis*, Sign., Ann. Soc. Ent. France, Sér. 3, T. viii, p. 952, 150; Stål, Hem. Afr., iii, p. 24, 1. Obs.: "*Species in Monogr. mea Anthocorid. orbis terrestr. omissa.*"

Nigro-piceus, nitidus, capite et pronoto pilis fuscis longis exsertis, hemielytris longe flavicanti-pubescentibus et margine externo ciliatis, pilis in certa luminis directione fuscescentibus; hemielytris obscure fuscis, opacis, vitta humerali medium attingente interne per dimidium basalem limbi exterioris clavi ducta, macula rotundata ad apicem embolii, apice clavi anguloque interno corii, angulo interiore basali membranæ lineaque externa suturam tangente ochraceis, membrana cetero fusca vel apice anguste ochracea; rostro, tibiis tarsisque testaceis, articulo primo rostri piceo.

Long, ♂ ♀, $3\frac{1}{2}$ mm.

Caput cum collo latitudine cum oculis vix longius, prolongatione apicali ante bases antennarum oculo æque longo, parce pilosulum, pilis sex longis exsertis. Rostrum coxas intermedias attingens, articulo primo oculos attingente. Antennæ nigrae, sat breviter pilosæ, articulo primo apicem capitis superante, secundo primo duplo et dimidio longiore; articulis duobus ultimis (sec. Signoret) testaceis. Pronotum capite fere longius, basi late sat profunde sinuata longitudine duplo longiore, apice longitudinalinaeque lato, annulo apicali tenui, lateribus non nisi omnium levissime et latissime sinuatis, angulis anticis obtuse rotundatis, deflexis, disco medio lævi, sulco longitudinali instructo, pone medium depresso irregulariter leviter striguloso; disco parcius pilosulo, angulis anticis pilam longam erectam ferentibus, marginibus lateralibus breviter tenuissime ciliatis. Scutellum basi nitidum, parte apicali opaca. Hemielytra opaca, margine exteriori sat longe ciliata. Membrana tantum venis duabus distinguendis. Alarum areola hamo a vena connectente emissio. Metastethium pleuris rima orificiorum, apice retrorsum curvata. Femora picea, antica et postica intermediis crassiora. Tibiæ anticæ maris apice dilatatae et fossa spongiosa obliqua sat magna instructæ, feminæ simplices, reliquæ spinulosæ.

ANTHOCORIS CARINULATUS, *sp. n.*

Sub-elongatus, sat angustus, cum hemielytris totus nitidus, sub-glaber; antennis pilosulis, nigris, articulo secundo dimidioque basali tertii testaceis, illo apice nigro, latitudini capitis cum oculis fere æque longo, tertio quarto parum brevior; rostro apicem coxarum anticarum attingente, piceo-nigro, articulo secundo tertio duplo longiore; pronoto annulo apicali optime discreto, transversim strigoso, callo magno, fortiter elevato, nitidissimo, marginibus ejus omnibus fortiter impressis, antico et postico carinulatis, lateribus distincte sinuatis, limbo laterali utrinque ad callum angustissimo; hemielytris albidis vel pallide flaventibus, clavo toto, corio angulo interiore cuneoque piceo-nigris, membrana fusco-nigricante, angulo-basali interiore, macula infra apicem cunei aliaque opposita marginis interioris albidis, solum vena externa bene elevata, secunda parum distinguenda, interioribus totis deletis; rima orificiorum metastethii brevi, recta, tenuiter marginata, carina longitudinali tenui; pedibus glabris, solum tibiis interne apicem versus pilosulis, femoribus nigro-piceis, ipso apice, tibiis tarsisque testaceis, tibiis basi anguste, tarsis articulo primo et ultimo piceis.

Long, ♀, 3 mm.

A. antevolenti, B. White (e California) proximus videtur, statura angustiore, colore hemielytrorum et pedum, rostro longiore, structura insigni pronoti præcipueque marginibus calli carinulatis mox distinctus. Caput pronoto distincte brevius, apicem versus sat longe productum, latitudine cum oculis circiter $\frac{1}{3}$ longius. Antennæ capite et pronoto simul sumtis nonnihil breviores. Pronotum basi margine laterali nonnihil latius, parte postica disci callo æquelonga, sub-lævi, margine basali late profunde sinuato. Scutellum parte apicali depressa transversim rugulosa. Hemielytra abdomen sat longe superantia, embolio apicem versus ampliato, margine laterali cunei eodem margine embolii fere duplo breviora. Pectus et abdomen piceo-nigra, nitida, hoc apice pilis exsertis instructum.

Species legit D. Sikora, communicavit D. Dr. Bergroth.

Helsingfors: May, 1892.

NOTES ON ETHIOPIAN RHYNCHOTA.

BY W. L. DISTANT, F.E.S.

Fam. PENTATOMIDÆ.

Sub.-Fam. SCUTELLERINÆ.

SOLENOTHEDIUM MADAGASCARIENSIS, *n. sp.*

Body above and below dark purplish-black; eyes ochraceous, their posterior margins blackish; scutellum with three ochraceous spots at apex, placed submarginally, not transversely. Legs and antennæ castaneous; rostrum castaneous, streaked with black.

Long., 15 mm.

Hab., Madagascar.

This species can be readily distinguished from any of the varieties of the African *S. litigerum*, Thunb., or *S. Schestedii*, Fabr., by the spots at the apex of the scutellum being placed submarginally and not transversely; it has also the scutellum less attenuated posteriorly than in those species, and in shape approaches the oriental species, *S. rubro-punctatum*, Guér.

Sub.-Fam. ASOPINÆ.

DOLYCORIS RUTHERFORDI, *n. sp.*

Body above shining pale reddish; head, two large oblique discal fasciæ to pronotum, basal half of scutellum, and a transverse, oblique, subquadrate spot on corium near apex of scutellum, bright shining indigo-blue. Membrane blackish, with the apical margin greyish. Legs bluish-black; base and a subapical annulation to femora, a large central annulation to tibiæ and bases of the tarsal joints ochraceous. Body beneath (imperfectly seen, owing to specimen being carded) bluish-black; lateral areas of sternum, and margins and apex of abdomen ochraceous.

Long., 7 mm.

Hab., Old Calabar (*Rutherford*).

Allied to the South African *D. fuscus*, Germ., in markings, but more shining and brilliant. Differs also by the shape of the scutellum, which is more narrowed and angulated towards apex. The head is also more narrowed at apex.

Sub-Fam. PENTATOMINÆ.

ENNIUS MONTEIRONIS, *n. sp.*

Head black, thickly and coarsely punctate, with a small luteous spot at centre of basal margin. Pronotum, scutellum, and corium ochraceous, thickly, coarsely, and darkly punctate, the punctures fuscous. Pronotum with the lateral margins sub-erect and luteous; the punctures darker and more confluent near anterior and lateral margins; three very small luteous spots on anterior margin, and a faint, central, paler, longitudinal line also continued through scutellum. Corium with the lateral margins, three discal lines, and two or three claval marginal lines, impunctate, pale, and lævigata. Scutellum with the apex narrowly paler, and with a small black spot at each basal angle. Membrane black, with the margins paler. Body beneath pitchy-brown, and coarsely punctate; lateral margins of sternum and abdomen narrowly luteous. Antennæ and legs black; trochanters, bases of intermediate and posterior femora, and intermediate and posterior tibiæ (excluding bases and apices), ochraceous. Rostrum black. Antennæ with the second, fourth, and fifth joints subequal in length.

Long., 11 mm.; lat., 5 mm.

Delagoa Bay (*Mrs. Monteiro*).

Sub-Fam. TESSERATOMINÆ.

TESSERATOMA HORNIMANI, Dist.

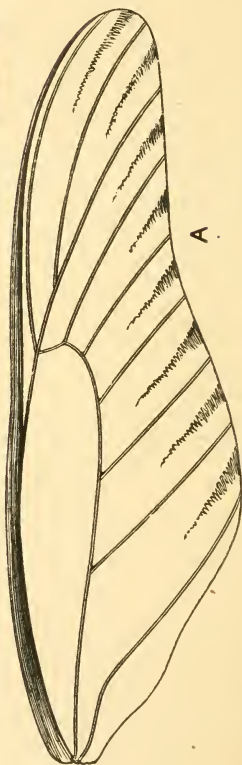
In a recent number of the *Revue d'Entomologie*, vol. x, p. 213, Dr. Bergroth has written the following note on this species:—

“Pars elevata metasterni ultra coxas medias parum producta.”

“Par ce caractère remarquable, non mentionné par M. Distant, cet insecte se distingue de tous ses congénères. La lame médiane du metasternum s'étend jusqu'aux hanches antérieures chez les autres espèces.”

In describing *T. Hornimani*, I certainly did not refer to the length of the metasternal elevation, as it is equalled in that respect by *T. Æthiops*, Dist., described at the same time (both these species, with their immature forms, have been figured in Waterhouse's “Aid to the identif. of Ins.”), it is also a character of *T. nemorivaga*, Dist. *T. Hornimani*, by the length of the metasternal elevation, cannot, therefore, be separated from the other species of the genus, or even from the African species.

The following is a tabulation of the African species of *Tessaratoma*, divided by this character:—



Metasternal elevation not reaching anterior coxæ, but only just passing the intermediate coxæ.

T. Hornimani, Dist.

T. Æthiops, Dist.

T. nemorivaga, Dist.

Metasternal elevation extending to the anterior coxæ.

T. Afzelii, Stål.

T. indicta, Dist.

Russell Hill Road, Purley :

June, 1892.

PAPILIO ANTIMACHUS, FEMALE (*ante* p. 162).

BY W. WATKINS.

EXPLANATION OF PLATE V.

Papilio Antimachus, female (natural size), in the collection of Mr. Herbert J. Adams.

A—outline of fore-wing of male.

B—terminal segment of male.

C—terminal segment of female.

The recent abundance of hibernated Butterflies, &c.—The feature of the spring and early summer of 1892 has undoubtedly been the occurrence in unusual numbers of *Vanessæ*, and more especially *Io*, *Atalanta*, and *cardui*. The latter has appeared in such quantity as to strongly suggest immigration; but no parallel can be drawn in this case with the extraordinary immigration that took place in 1879, for the season that year was one of the most inclement ever known, and moreover, we have not at present heard of immense migratory swarms on the continent, such as preceded the immigration of the species into this country in 1879, and it is scarcely necessary to say that in the early summer of this year (1892) the heat was sometimes almost tropical. The swarm of *V. cardui* in 1879 was abnormal, both in amount and in the conditions under which it occurred. *Colias Edusa* has appeared in some numbers, and widely spread; almost every active collector has seen or taken it near London, and we have heard of it from far west in the south of England. The hosts of *Plusia gamma* seem to us to have been certainly immigrants for the most part; the somewhat numerous captures of *Deiopeia pulchella* may probably be placed in the same category, with some others.

In other Orders there has been no lack of proof that an unusually high temperature is conducive not only to immigration, but also to abundance, and, in some cases, to premature development.

At the time of writing this note we are disagreeably reminded that a great change has taken place. From a nearly tropical temperature we have plunged almost into winter again, and several degrees of frost have been registered in the south of England. It remains to be proved in how far the "promise of spring" will be realized in autumn, and we look forward to the result with considerable interest, more especially as regards *Colias Edusa*.—EDS.

Polyommatus dispar v. *rutilus* in England.—I was not aware, until hearing a day or two ago from my friend Mr. Barrett, that the continental form of *P. dispar* was supposed never to have been taken in this country, as I have known for many years that my father took both ordinary *dispar* and v. *rutilus* some time between 1825 and 1834. My father tells me he captured all his specimens himself (eight in number), all of which are in my collection, viz., five ♂ and three ♀. One male is typical *rutilus*, another almost typical, but with slightly larger spots, whilst a third is midway between *dispar* and *rutilus*, the remaining two are true *dispar*; of the females, one is fairly typical *rutilus*, another is on the upper-side like the darker specimens occasionally taken on the continent, viz., with larger spots on the upper wings, but the spots beneath are decidedly larger than any of my v. *rutilus*, whilst the third is true *dispar*. There is no doubt of these being truly endemic specimens, as my father (who, with his brothers, were keen collectors in their early years) remembers them, and he says he never bought an insect in his life. I suppose, moreover, that very few *rutilus* would find their way over here as long as sixty years ago, still less into the quite unknown collections of boys under twenty years of age. My father has never been on the continent at all.—GEORGE T. BETHUNE-BAKER, Edgbaston: June 14th, 1892.

[Two of the specimens in question are before me. They are clearly of the var. *rutilus*—the spots much smaller and the under-side less blue. Mr. Baker, Sen., recollects their capture, and as British specimens they are of extreme interest.—C. G. B.].

Reported occurrence of Papilio Podalirius in Sussex.—The following is an extract from a letter just received from Mr. Charles E. Morris, of 4, Oriental Place, Brighton:—"I am sure you will be interested when I tell you that whilst working Robin's Post Lane, Polegate, yesterday (June 13th), upon some cowdung in the road I came across a very fine female *P. Podalirius*. I instantly identified it, being most familiar with the insect, having caught many three years ago in Switzerland and Northern Italy. I had at least five or six strikes at this one, but somehow, through excitement or surprise, failed to obtain it. The tails were intact, the ground colour much whiter than usual (possibly bleached), but otherwise in good condition. It was a very large one, undoubtedly a female. I noticed quantities of the food plant in the locality. How it came there I cannot tell. I need hardly tell you I followed it as far as I could, trespassing through more than one hop field; for several moments it rather toyed with my net, and then went over the hedge."—H. Goss, The Avenue, Surbiton Hill: June 17th, 1892.

[The fact that large numbers of the pupæ of *P. Podalirius* are imported into this country, and that some of the resultant butterflies may accidentally escape, or be intentionally set free, should not be lost sight of. The pale colour seems to indicate the var. *Feisthamelii*, which is the more southern form.—EDS.].

Aporia crataegi.—The Dover Descriptive Pictorial published last year contains articles by Members of the local Field Club upon the Archæology, Geology, and Entomology of the neighbourhood. In the latter article *A. crataegi* is stated to occur annually near Sandwich, and I know personally that, with the exception of

last year, it has been so captured since 1885. In 1888, the latest date known to Mr. Briggs, it had apparently once more begun to extend its radius, as individual specimens were taken by his nephew near Ramsgate, and by Mr. Harvey at Watersend, near Dover, apart from the head locality. Mr. Tutt is aware that it still lingers as a British species with us, but doubtless his mention of its having been recorded by me was thought to be sufficient without referring to more recent captures, his desire, as mine, and I think all but ardent young collectors, being to see this fine species again firmly re-established. — SYDNEY WEBB, Maidstone House, Dover : *June 3rd*, 1892.

Early occurrence of Colias Edusa in Guernsey and Sark.—As the occurrence of *Colias Edusa* before the autumn is an unusual event in the Channel Islands, I think it worth recording that numbers of specimens were seen this season in Sark as early as May 25th, and in Guernsey on May 28th and 30th. I captured a specimen on June 7th in fair condition, and one also on June 12th ; both of these were females.—W. A. LUFF, Guernsey : *June 16th*, 1892.

Deiopeia pulchella at Shorncliffe.—A ♀ specimen of the above, in fine condition, was taken by my groom on the Camp on May 29th. Oddly enough he found it in the midst of bricks and mortar where extensive building operations are in progress.—C. E. PARTRIDGE, Shorncliffe Camp : *June 20th*, 1892.

Garden pests in 1892.—Although it cannot be predicted from the abundance of insects of any kind in one year that they will be equally common in the same place in the next season, yet the experience of horticulturists, with the application of drastic remedies, goes to show that such will tend at least to the diminution of the numbers of their enemies in the next generation. At all events, whether in consequence or not of the destructive warfare I waged against the larvæ of *Abraxa grossulariata* last year, there are very few of them now on the *Euonymus japonicus* in the garden, and there is no evidence of their having been on the trees.

Last year, a honeysuckle that stretches over twenty feet of paling, having a southern aspect, was sick almost to death, from the exhaustive attacks of *Aphides*, so that the leaves were to a great extent shrivelled up, no strong shoots were made, and scarcely any flower-buds for this ensuing season were formed. But, although no remedies were applied, there is not now an *Aphis* on the plant, and it is making strong growth ; in this case, therefore, the reason for the disappearance of the plague is not apparent.

The rose trees, also, that suffered greatly last year from *Aphides*, which were not much molested, are now free from them ; but their place is more than supplied by the larvæ of *Typhlocyba rosæ*, which, by their action on the under-side of the leaves, have made the upper-side to be covered with yellow spots, much to their disfigurement, and, doubtless, to the detriment of the trees.

The apple trees that last year were defoliated by the larvæ of *Hyponomeuta padella*, and, in consequence, shed their fruit untimely, are now full of healthy leaves, but it is yet too soon to say anything decisive about their near future.

Yet, though I have in some respects avoided Scylla, I have in others fallen into

Charybdis; for the larvæ of *Philænus spumarius*, never uncommon, although still in their infantile state, are now present in unusual numbers on almost every plant in the garden, revelling in their native froth, or "cuckoo-spit," as it is called, especially on chrysanthemums and phloxes, curling up and preventing the development of the terminal leaves. Many years ago, Prof. Westwood wrote an article on this subject in the "Gardeners' Chronicle." I have taken eight or ten of the wretches out of the top of a shoot, and have thus given the plants a chance of recovery from paralysis.

In the cases above-mentioned, in which there was no human intervention (as well as in others similar), we may observe that Nature, of her own proper motion, by her "skyey influences," or other mode of operation (it may be beyond our ken), restores the equilibrium of her living forces, which is continually disturbed by man's action in cultivating plants or crops for his own purposes; and thus she keeps her system in order.—J. W. DOUGLAS, 153, Lewisham Road, S.E.: June 2nd, 1892.

Orthezia urticae, Linn., male.—By the kind intervention of Mr. Bignell, I have received a male of this wonderful *Coccid*, with its fine long tail of silky filaments quite perfect, which was taken by Major John N. Still, of Seaton, Devon, who obligingly sends the following particulars. "I saw the insect on the 25th May, in the valley of the Axe, flying at mid-day in hot sunshine. I boxed it off *Symphytum officinale* growing in a wet ditch." I have frequently found the female at several places, always on *Stellaria holostea*; Signoret says that he has found the species at different places in France, on several kinds of plants, but never on nettles, as the name indicates. Westwood's figure of the ♂, under the name of *Dorthesia characias*, Latr., on the frontispiece of his "Introduction to the Modern Classification of Insects," is an excellent illustration, in which the peculiar character of the caudal fascicle is well shown. I have never had the good fortune to capture the male, which seems to be rarely seen anywhere, the reason being, probably, that, like other *Coccids*, it does not long survive after mating. The contrast of colour (to say nothing of that of form and size, as well as between apterous and winged) in the respective sexes, is very remarkable: the ♀ being of a pure, sugar-like, white, the ♂ of a greyish-black. It is a representation among hexapods of "the lady wedded to the Moor"—Desdemona to Othello.—Id.

Coleoptera in the Hastings district in 1891.—The following are the best of the species taken by me here last year. *Harpalus servus* and *Amara rufocincta* sparingly on the Camber sandhills. **Harpalus tardus* singly, at roots of grass in sandy places. *Lymnæum nigropiceum*, a few specimens only, on Pett beach. *Hydroporus latus* occurred again in plenty at Guestling, and in the ditches at Rye. *Ochthebius bicolon*, *margipallens*, *marinus*, and *æratulus*, were common, while *exaratus* occurred singly.

Among the *Staphylinidæ* I found *Mycetoporus Reyi*, roots of grass in sandy places; *clavicornis* in rotten wood and under an old faggot stack; and a single specimen of *nanus* by sweeping near Rye. *Actobius signaticornis* was not rare, by the side of brackish ditches, in company with *Limnichus pygmaeus*, *Trog. bilineatus*, *corticinus*, and *elongatulus*. After a ten years' interval, a second specimen of *Stenus Guynemeri* turned up at Fairlight in wet moss. On one occasion *Bledius opacus*

was to be obtained in plenty at Camber. *Homalium concinnum* was not rare at Fairlight in stack refuse. *Ancyrophorus aureus* (two specimens only) at Dallington Forest, and **Micralymma brevipenne* under seaweed near Fairlight.

Evening sweeping produced *Anisotoma badia*, *dubia*, *litura*, **parvula* (1), and *calcarata*, the last named common and very variable; *Colenis dentipes*, *Cyrtusa pauxilla*, *Hydnobius strigosus* (1), *Amphycillus globus*, *Agathidium nigrinum*, *Colon brunneum* in some small numbers, and **serripes* rarely. *Epuræa decemguttata* and **diffusa*, *Cryptophagus *populi* and **setulosus*, **Dryophilus pusillus* (1), *Clambus armadillo*, and *Bythinus Curtisi*.

Pocadius ferrugineus was plentiful in puff balls, and *Lycoperdina* rare. **Heterocerus rectus*, a couple of rather doubtful specimens from Camber.

From an old beech tree I got a few specimens of **Cryphalus fagi* and plenty of **Hylastes obscurus* from broom stumps. *Ceuthorhynchideus *horridus* (1) in flood refuse, and **Dawsoni* not rare on *Plantago* at Hastings.

*Magdalinus *pruni* and *cerasi*, *Liosomus oblongulus*, **Polydrosus chrysomela* (Camber), *Cryptocephalus *lineola* and **bilineatus*, by general sweeping. Under decaying vegetable matter in woods I took **Trachodes hispidus* (2), *Tropiphorus carinatus* in plenty, also in moss, and *Plinthus caliginosus*.

At Bodle Street (which is just outside the Hastings district) *Potaminus substriatus* was again plentiful, and *Haliplus cinereus*, *Hydræna pulchella*, *nigrita*, *riparia*, *Gyrinus urinator*, *Brychius elevatus*, *Hydroporus Gyllenhalii* and *lepidus*, were all somewhat common.

Those species which are marked thus * have not been previously recorded from the Hastings district.—W. II. BENNETT, 11, George St., Hastings: June 15th, 1892.

Cryptocephalus bipunctatus (lineola), var. *Thomsoni*, Weise, at Woking.—On June 11th, by sweeping among shallows, I captured a single example (♀)† of a *Cryptocephalus* answering to Weise's description (Naturgesch. Ins. Deutschl., vi, p. 167) of his var. f (*Thomsoni*) of this species: "elytris nigris, macula transversa angusta apicis rufa." This specimen differs from my single representative of *C. biguttatus*, Scop. (*bipustulatus*, F.), as defined by Weise (*op. cit.*), in the much narrower, more transverse apical spot; and also in the elytra being more finely punctured and with flat interstices, the sculpture thus agreeing with that of *C. bipunctatus* (var. *lineola*). The typical form of *C. bipunctatus*, L., is thus defined by Weise:—"elytris rufis, margine omni, epipleuris punctisque (1, 1) nigris;" it has not, I believe, been found in Britain; *C. lineola*, F. (*sanguinolentus*, Scop.), is placed by Weise under his var. d—"elytris vitta lata longitudinali nigra." It is probable that some of the British specimens determined as *C. biguttatus (bipustulatus)* really belong to *C. Thomsoni*, Weise; Fowler (Brit. Col., iv, p. 291) gives Lyndhurst, Bournemouth, and Chat Moss as localities for *C. biguttatus*. Thomson (Skand. Col., viii, p. 304) apparently includes both *C. Thomsoni* and *C. biguttatus* under the var. f of *C. bipunctatus*; he does not mention the elytral sculpture. *C. lineola*, F., occurs here in the same locality, where I have lately taken *Anchomenus sexpunctatus*, *Sericosomus brunneus*, *Salpingus æratus*, &c.—G. C. CHAMPION, Heatherside, Horsell, Woking: June 13th, 1892.

† I have since captured another, a male, on June 18th.—G. C. C.

Sympetrum Fonscolombii in Surrey.—On the 8th instant, at a pond not very far from Leatherhead, I had the good fortune to find a *Sympetrum* which I believed to be *S. Fonscolombii*, a belief which my friend Mr. McLachlan has since confirmed. My brother and I secured a few examples, all ♂, but the locality is a very restricted one, as they only occurred at one portion of one pond, although two other ponds were within a hundred yards.

When alive they are certainly magnificent insects, as the rich blood-coloured scarlet of the body, the carmine nervures of the wings, and the prominences of the thorax, give them a very vivid appearance. Some are much affected by a dark carmine-coloured *Acarus*. On one specimen I counted 85. Do these *Acari* extract any colouring matter from their host? They exactly match the colouring of the nervures, and one that I squeezed gave out a similar coloured fluid.

There have been but three, or perhaps four, previous occurrences of this dragon fly in Great Britain. The oldest one is that in Mr. J. F. Stephens' cabinet now in the British Museum; this is a ♀. The next (a ♂) formerly in Mr. Desvignes' collection, is now in Mr. McLachlan's cabinet. The third (a ♂) was taken by Mr. Hall at Deal in 1881, and is now, I believe, in the Dover Museum. It has been mentioned that one taken at Exmouth was exhibited at the Entomological Society in 1887, but I can find no record of it in the Proceedings.

At the time we took these we also took *P. depressum* and *L. quadrimaculata* freely, *E. cyathigerum* and *A. puella* in abundance, a few *I. elegans* and *P. pennipes*, and one *C. splendens*.—C. A. BRIGGS, 55, Lincoln's Inn Fields: June 18th, 1892.

Drepanopteryx phalænoides.—It may interest you to know that I captured on June 6th another specimen of *D. phalænoides*. From three points of view—one local, the others general—the incident is of importance. First, the locality is a good seven or eight miles from Cleghorn. Second, the time of year; all my previous captures have been autumnal. Third, the example was caught in flight at dusk; previous captures were made by beating, and *D. phalænoides* thus appears to be crepuscular, like its commoner relatives. It was taken for a moth—an argument in favour of attending to more than one Order. The locality is again near water—at the side of the Clyde, near the opening of a little glen.

The weather is fine and warm. Everything has come out at once, and the show of laburnum, lilac, mountain ash, apple and other blossom is making the country look very pretty.—KENNETH J. MORTON, Carlisle: June 9th, 1892.

Mutilla europæa at Chobham.—On May 21st I captured a female *Mutilla europæa* on a sand bank at Chobham. At the first glance it reminded me of *Clerus formicaria*, which I have taken in abundance in Scotland. —A. BEAUMONT, Lewisham: May, 1892.

The Hope Professorship.—A vacancy in the list of Curators of the Hope Professorship at Oxford having occurred through the death of Prof. H. N. Moseley, Mr. Stainton has been appointed. We need scarcely remind our readers that the Hope Professor is the veteran J. O. Westwood.

Obituary.

Prof. H. C. C. Burmeister.—We have just heard of the death of this venerable Entomologist, on the 2nd May, at the age of 85. An extended notice of him will appear in our next or an early number.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *June 4th to 7th, 1892.*—A three days' excursion was made to Sherwood Forest. A party of ten made Edwinstowe their head-quarters, from which they worked Thoresby and Sherwood Forest proper. They were mainly Lepidopterists, who were not rewarded by anything new; many larvæ of *Eupheria fulvago* were taken, a few *Notodonta trepida*, *Eurymene dolobraria*, &c., but nothing of note. A few Dipterists, who were of the party, succeeded in taking a number of interesting *Syrphidæ* on whitethorn bushes, including such species as *Oriorhina floccosa*, *O. berberina*, &c., they also took commonly on the furze bushes the fine "daddy," *Pachyrrhina crocata*. Glorious weather was enjoyed, and more insects should have been on the wing than were met with.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *May 26th, 1892.*—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. Jenner Weir exhibited a specimen of *Anosia Plexippus*, L., var. *Erippus*, Cramer, which had been obtained by one of the employés of Captain Parke, in the Falkland Islands; it therefore appeared that the migratory habit had developed in the southern form as in the northern. Until this insect was captured, the only butterfly known in these islands was *Brenthis Cytheris*, Drury. Mr. Hawes exhibited and contributed a note on a series of *Pieris napi*, L., bred from ova laid by parent insect taken near Bentley, Suffolk, June 10th, 1891; the seven male and fourteen female imagines appearing from 21st to 31st July, the remainder of the brood stood over until the spring, and thirty-one emerged between 6th and 20th May. Mr. Hawes suggested that the cool summer of last year affected the pupæ to such an extent as to retard three-fifths of the brood. Mr. Jenner Weir said this was the most interesting exhibition he had ever seen on this subject, as the two forms of the species, viz., the summer and spring emergences, having both appeared from a single brood reared under exactly similar circumstances. Mr. Frohawk, a pupa of *Argynnis Paphia*, L., and made some observations as to the time occupied in the pupal change. Mr. Tugwell, specimens recently taken by him at Tilgate Forest, including *Syriethus malvæ*, L., approaching the var. *Taras*, Meig., *Nisoniades Tages*, L., showing variation, varieties of *Argynnis Euphrosyne*; also an extremely pale variety of *Anisopteryx æscularia*, Schiff., taken by Mr. Hann, of Reading. Mr. R. Adkin, a bred series of *Asteroscopus nubeculosa*, Esp., and remarked on the species remaining in pupa for two or three years: these now exhibited having pupated in 1890. Mr. Tugwell stated that he had bred them the first season. Mr. Hill, *Tænio-campa gothica*, L., and var. *gothicina*, from Rannoch. Mr. Carpenter, an example of *Vanessa Antiopa*, L., taken on Tooting Common some few years back. Mr. Adkin

called attention to the unusual abundance of *Plusia gamma* on the last few evenings. Mr. Dobson, Mr. J. A. Cooper, Mr. Frohawk, Mr. Adye, Mr. Winkley, Mr. Tutt, and Mr. Barrett also made some observations thereon. Mr. Jenner Weir delivered a Zoological lecture, in which he drew attention to some remarkable cases in which mammalia and birds having been in remote geological times differentiated for one mode of life had adopted entirely different habits.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *June 1st, 1892.*—ROBERT MCLACHLAN, Esq., F.R.S., Treasurer, in the Chair.

The Hon. Walter Rothschild sent for exhibition *Neptis mimetica*, *n. sp.*, from Timor, mimicking *Andasena Orope*, one of the *Euplaidæ*, and *Cynthia equicolor*, *n. sp.*, a species remarkable for the similarity of the two sexes, from the same locality; also a hybrid between *Saturnia carpini* and *S. pyri*, and specimens of *Callimorpha dominula*, var. *Romanovii*, var. *italica*, and var. *donna*, bred by a collector at Zurich; he further exhibited a very large and interesting collection of *Rhopalocera* made by Mr. W. Doherty in Timor, Pura, Sumba, and other islands, during October and November, 1891. Col. Swinhoe remarked that the various species of *Neptis* were usually protected, and were imitated by other insects, and did not themselves mimic anything, and that the pattern of the *Neptis* in question was very common among the butterflies in the Timor group. Mr. Jenner Weir, Prof. Meldola, Mr. Trimen, and others continued the discussion.

Mons. A. Wailly exhibited about fifty species of Australian *Lepidoptera*, mostly from Queensland, and fertile ova of *Trilocha varians*, which are arranged in small square cells, fastened together in large numbers, and present an appearance quite different from the usual type of Lepidopterous ova.

Mr. F. Merrifield exhibited a series of *Drepana falcataria*, half of which had been exposed for a week or two, in March or April, to a temperature of about 77°, and the other half had been allowed to emerge at the natural outdoor temperature. The latter insects were in all cases darker than the former, all being equally healthy. Mr. McLachlan, Mr. Barrett, Mr. Jenner Weir, and others took part in the discussion which followed.

Mr. C. G. Barrett exhibited a curious variety of the male of *Arctia mendica*, bred by the Rev. W. F. Johnson, of Armagh.

Canon Fowler exhibited the egg case of a species of *Mantidæ* from Lake Nyassa, and specimens of *Bledius dissimilis*, Er., from Bridlington Quay, Yorkshire.

Mr. McLachlan called attention to the re-appearance in large numbers of the diamond-back moth, *Plutella cruciferarum*, which was very abundant in gardens near London, and expressed his opinion that the moths had been bred in the country and had not immigrated.

Mr. Jenner Weir, Mr. Bower, and Prof. Meldola stated that they had recently seen specimens of *Colias Edusa* in different localities near London.

Mr. Jenner Weir and others also commented on the large immigration of *Plusia gamma*, and also on the appearance of a large number of *Cynthia cardui* and other *Vanessidæ*.

The Hon. Walter Rothschild communicated a paper on two new species of *Pseudacræa*.—W. W. FOWLER, *Hon. Sec.*

ENTOMOLOGICAL NOTES FROM TASMANIA.

BY JAMES J. WALKER, R.N., F.L.S.

(concluded from page 157).

No *Cicindelidæ* were met with, this group apparently not being represented in Tasmania; but the *Carabidæ* are fairly numerous, and comprise some fine forms. Of these, the most conspicuous is *Perco-soma carenoides*, White, which looks somewhat like an enormous black *Broscus*, and is found not rarely under damp logs, &c., at a considerable elevation. The smaller, but somewhat similar, *Lychnus strangulatus*, Bates, occurs with it, also three or four species of *Promecoderus*, several of *Pterostichus*, and the active little *Oöpterus tasmanicus*, Bates. Running with great agility on the trunks of felled trees are found several species of *Scopodes*, little strongly-embossed beetles, somewhat like *Tachypus*, with very large and prominent eyes, of which the finest and most conspicuous, as well as the commonest, is *S. tasmanicus*, Bates. Under dry loose bark are found hosts of *Dromius*-like beetles of flattened form, some very prettily variegated, and of fair size (*Xanthophæa*, *Sarathrocrepis*, *Philophlæus*, *Amblyteles*, *Agonocheila*, &c.); while *Plochionus australis*, Er., is found under bark pretty high up the mountain, along with the singular little *Adelotopus hæmorrhoidalis*, Er., a tortoise in shape, but by no means so in gait. In a fine piece of marshy ground at Bellerive, on the opposite side of the river to Hobart, are found several species of *Anchomenus* and *Olivina*, and (rarely) a fine beetle allied to *Oödes*. The elegant *Licinus*-like *Dicrochile Goryi*, Bdv., occurs in a salt marsh at "Muddy Plains," eight miles from Hobart on the Bellerive side; and at "Denison Gorge," I met with the very fine and very active black *Lestignathus cursor*, Er.

Water-beetles cannot be called abundant near Hobart, though several fine species of *Hydradephaga* and *Philhydrida* are found here, which I did not come across. At Launceston I was more fortunate, taking among others, the conspicuous *Cybister*-like *Trogus insularis*, Hope, *Copelatus australis*, Clark, *Colymbetes lanceolatus*, Clark, and a fine large Gyrinid, *Enhydus Howitti*, Clark.

The *Brachelytra* are also rather poorly represented as regards number of species, the most conspicuous being the big red-headed *Creophilus erythrocephalus*, F., which is found commonly in carcasses, along with a fine *Aleochara (hæmorrhoidalis)*, Er.). Another handsome species is *Cafius pacificus*, Er., which I once found sparingly under a dead gannet on a sandy beach. Some very pretty minute species of *Staphylinidæ* are found under loose damp bark, along with several fine

Pselaphidæ and *Scydmanidæ*. Although well looked out for, no *Paussidæ* put in an appearance.

In carcases the large, flat, brown *Silpha*, *Ptomaphila lacrymosa*, Schreib., is found not uncommonly; and under logs *Scaphidium* (? *4-pustulatum*, Oliv.) and *Scaphisoma* occur, as at home. The *Histeridæ* are represented by *Platysoma*, *Teretrius*, and *Acritus* under bark, and by the brilliant, but common and widely distributed, *Saprinus cyaneus*, F., in carrion. Several species of the singular genus *Brachypeplus* congregate in numbers between the bark and the wood of newly-felled gum-trees; and under older and more decayed bark are found a species of *Cerylon*, the fine and active *Dendrophagus australis*, Er., three species of *Brontes* (*B. australis*, Er., *B. militaris*, Er., and *B. lucius*, Pasc.), two or three of *Deretaphrus*, a fine and handsome *Prostomis* (*Howitti*, Pasc.), several very nice little forms allied to *Ditoma* or *Endophlæus*, some having curious lobed lateral margins to the prothorax, and the singular rough *Meryx rugosa*, Latr., all of which, with the exception of the first-mentioned, are more or less common. A *Colydium*, very like our own New Forest rarity, is found occasionally in company with the above, and the *Trogositidæ* are represented by the beautifully variegated *Leperina decorata*, Er., which is met with, sometimes in plenty, under loose dry "wattle" bark. A small species of *Soronia*? was once found in profusion, in large potato-like galls on the twigs of *Acacia decurrens*, Willd., formed by a Lepidopterous larva.

Old rotten stumps produced copiously one of the most beautiful of the Tasmanian insects, the brilliant stag-beetle, *Lamprima rutilans*, Er., which varies in colour from metallic golden-red in the ♂ to dark bronze-green (rarely dark blue) in the ♀. This splendid insect is often taken on the wing in the hot sunshine. The curious little cylindrical, brown *Syndesus cornutus*, F., prefers the shades of evening for its flight, and is also found not rarely in very damp rotten logs. Two species of *Ceratognathus*, *C. niger*, Westw., and *C. Westwoodi*, Westw., prefer drier timber, the latter occurring, but not very commonly, in decaying "myrtle" trees; while three or four species of *Lissotes*, insects closely resembling our *Dorcus* in aspect, are found in plenty under logs and loose bark, as well as walking on roads and pathways in the evening. The large, shining, pitchy-black *Passalid*, *Pharochilus politus*, Burm., is rare near Hobart in old stumps, but I received it in numbers, with many other fine beetles, from George's Bay, in the north-east part of the island.

The *Coprophaga* comprise three or four species of *Onthophagus*,

but I found one *Aphodius* only, *A. Howitti*, Hope, a rather large pallid species. *Proctophanes sculptus*, Hope, a black *Ammæcius*-like insect, is fairly abundant under dung in sandy places. On the white blossoms of the so-called "box tree" (*Bursaria spinosa*, Cav.), a little, fulvous, hairy, long-legged chafer, *Phyllotocus assimilis*, MacL., occurs in astonishing profusion about Christmas, and the flowers of the "tea tree" (*Leptospermum*) are equally attractive to the brilliant green *Diphucephala colaspidoides*, Gyll., an insect which is sometimes injurious to fruit trees by devouring the leaves. Small hairy "chafers" of the genera *Caulobius*, *Liparetrus* and *Heteronyx* are taken freely by beating, the larger *Haplonycha obesa*, Bdv., and *Cheiroplatys mælius*, Er., occurring on the wing at dusk. "Fire weed" flowers produce sparingly the queer elongate *Telura vitticollis*, Er.; and the large green *Anoplognathus suturalis*, Bdv., is attached to the "wattles." The very anomalous *Cryptodus tasmanianus*, Westw., frequents old trees, especially when infested with ants.

The *Buprestidæ*, although not so well represented as in most parts of temperate Australia, include some fine species, of which the most conspicuous are the large black and yellow *Cyria imperialis*, Don., and *Stigmodera Mitchelli*, Hope, both of which occurred to me very sparingly. *S. ocelligera*, Gory, a lovely little metallic-green species with orange apical spots on the elytra, was found in profusion on *Leptospermum*-blossoms in the marsh at Bellerive, but it appeared to be very local. A beautiful scarlet and black insect, *Nascio Parryi*, Hope, occurs rather commonly on freshly cut stumps, but is very active and difficult to catch. The brilliant *Melobasis gloriosa*, Lap. et Gory, and one or two bronze-coloured species of *Ethon*, are also taken on freshly cut timber as well as by sweeping. A *Throscus* (*elongatus*, Bonv.*), very like our larger British species, may be taken freely under loose bark, where also two or three nice *Eucnemidæ* occur sparingly, and numbers of *Elateridæ*, some (as for instance, *Lacon caliginosus*, Guér.) in great profusion. The largest insects of this group are the conspicuous *Chrosis trisulcata*, Er., and *C. gracilis*, Jans., which are sometimes met with in and about rotten timber.

Among the *Malacodermata*, the species of *Metriorrhynchus* (conspicuous red and black *Lycidæ*) are the most noticeable, being found everywhere in flowers, and running on fallen trunks, in the latter situation often in company with a species of *Eros*. Several of these insects are very closely mimicked by species of the Heteromorous genus *Pseudolyceus*, which occur with them, and are quite similar in

* This species belongs to the recently described genus *Aulonothroscus*, Horn.—G. C. C.

their habits, being most readily recognised, apart from structural differences, by the antennæ being much widened in the middle. The *Cleridæ* are well represented by several exceedingly pretty little insects (*Tillus carus*, Newm., *Opilo 6-notatus*, Westw., *Thanasimus accinctus*, Newm., *Lemidia nitens*, Newm., *Pylus bicinctus*, Newm., &c.), which occur chiefly on fences and decayed timber; the bronze-green species of *Eleale* which frequent flowers, and the large and curious brown, strongly punctured *Natalis porcata*, F., which abounds under dry loose bark of *Eucalyptus*. A fine *Lymexylon* (*L. australe*, Er.), occurred to me rarely near Launceston.

The *Heteromera* most frequently met with are several species of *Adelium*, stout black or bronzy insects, usually of considerable size, which occur in all situations, one being found on the top of Mount Wellington; with them, the large flat-backed *Coripera deplanata*, Boisd., is sometimes plentiful, but is rather local. Rotten stumps yield *Nyctobates crenata*, Bdv., *Promethis angulata*, Er., *Menephilus corvinus*, Er., and *M. longipennis*, Hope, all black strongly punctured beetles, not unlike *Tenebrio*; and under dry loose bark the singular *Ulodes verrucosus*, Er., the large brown *Silpha*-like *Pterohelæus Reichei*, Brème, and *P. peltatus*, Brème, the cylindrical blue *Titæna columbina*, Er., *Ananca puncta*, Macl., and, especially in "the Domain," a very beautiful purplish-bronze species of *Amarygmus*, are met with in more or less abundance. The very pretty *Hymæa succinifer*, Pasc., occurs under bark at a good elevation, in company with one or two species of *Pythidæ* (*Salpingus*?), and several fine *Melandryidæ*—*Phlæotrya* spp., and *Orchesia*. *Cilibe lævicollis*, Oliv., and a smaller species of the same genus, are found at roots of herbage on sandy beaches near Hobart, and the former is not rare under stones at Launceston. Flowers attract *Lagria grandis*, Gyll., in abundance, as well as several species of *Mordella*, one or two of fairly large size.

The *Rhynchophora* are certainly the best represented, both as to species and individuals, of all the groups of the Tasmanian *Coleoptera*. These insects are chiefly obtained by beating and sweeping, and I mounted examples of at least 120 species. Among the most conspicuous are the large and handsome *Prostomus scutellaris*, F., and *Aterpus rubus*, Boh., which occur under bark in company with numerous forms of *Acalles*, and of the larger genus *Poropterus*. By beating the foliage of the young "peppermints," species of *Goniopterus*, *Cryptorhynchus*, *Belus*, &c., are obtained, and the same treatment of *Acaciæ* produces the conspicuous *Rhinotia hæmoptera*, Kirb., and *R. dermestiventris*, Bdv. The *Brenthidæ* are sparingly represented by species of *Cyphagogus* and

Cordus, the latter occurring under dry bark very near the top of Mount Wellington. In dry stony places, more particularly near Launceston, are found species of the curious genera *Amycterus* and *Psolidura*, which have somewhat the habits of *Brachycerus*; the *Psoliduræ* are remarkable for the extraordinary forceps-like armature of the last abdominal segment in the ♂.

As may easily be imagined in so varied and richly wooded a country, the *Longicornia* are a conspicuous feature in the insect fauna, and include some very fine and handsome species. The largest is the great *Prionus*-like *Toxentes arcuatus*, F., which is not common near Hobart, but fairly plentiful at Franklin and Scottsdale, near Launceston, being taken under loose bark. In decayed "post and rail" fences the beautiful little violet-blue *Iotherium metallicum*, Newm., is not uncommon, and *Enneaphyllus æneipennis*, Waterh., a very fine and conspicuous beetle with splendidly flabellated antennæ in the ♂, occurs sparingly at a good elevation on the Mountain, where also the curious rugose *Dorcadida biocularis*, White, is met with walking on tree trunks and rocks. *Phacodes obscurus*, F., *P. personatus*, Er., and *Phoracantha semipunctata*, F., all fine large insects, are attached to the "wattle" trees, sheltering under the loose bark, while two or three other species of *Phorocantha*, *Callidiopsis scutellaris*, F., *Bethelium signiferum*, Newm., and the very variable *Epithora dorsalis*, MacL., have their headquarters under gum-tree bark in "the Domain." The "box tree" flowers attract *Stenoderus suturalis*, Oliv., and the pretty little brown and white striped *Syllitus grammicus*, Newm.; both these beetles emit a strong and disagreeable odour like that of coal tar, while the *Phorocanthæ*, on the other hand, have a pleasant apple-like scent. On "tea tree" flowers are found the brachelytrous *Hesthesis cingulata*, Kirb., and the broad horned *Distichocera par*, Newm.; *Amphirhoë decora*, Newm., a slender, graceful little insect, with long legs and very large femora, is found rarely on fences, and the stout little grey *Hebecerus marginicollis*, Bdv., occurs in profusion on low "wattle" bushes.

The most numerously represented genus of the *Phytophaga* is *Paropsis*, of which quite a score of species, varying in size from that of a *Scymnus* to a large *Chrysomela*, were obtained chiefly by beating the young foliage of the young "peppermint" trees; though some, as the conspicuous *P. picea*, Oliv., and *P. intacta*, Newm., are also to be found under bark. Many of these insects are very beautiful when alive, glittering like *Cussididæ* with golden and other metallic tints, and like them, fading sadly when dry. With these several pretty species of *Cadmus* (notably the bright yellow and black *C. australis*, Boisd.) and *Cryptocephalus*

are got by beating. *Galerucidæ* and *Halticidæ* are not plentiful, and I could find no *Cassididæ*; a fine species of *Eurispa* occurs freely on the "cutting grass" half way up the Mountain. *Coccinella conformis*, Boisd., a handsomely marked species, is the most conspicuous representative of the *Coccinellidæ*, and some very pretty insects allied to *Rhizobius* are to be found under loose bark.

The other Orders of insects must be very briefly dismissed. The *Hemiptera* are tolerably numerous in species, and include several very fine and singular forms. Among the *Hymenoptera*, which are also well represented, I may mention the curious genus *Thynnus*, some species of which, as the large wasp-like *T. variabilis*, are fine and handsome insects; the males are usually found on flowers, and the singular apterous females run about actively in hot sandy places. The Ants are very plentiful, and some are possessed of very formidable stinging powers, notably the large *Myrmecia pyriformis*, which attains a length of quite an inch, and forms large colonies under stones, &c., in "the Domain" and elsewhere. Several very curious large-headed species, blind or nearly so, are found in small communities under bark and in rotten wood. A fine *Bembex* frequents the sandy beaches, and the leaves of the young *Eucalypti* are often stripped by the black larvæ of a handsome sawfly (*Perga* sp.). Two or three species of *Cicada* enliven the woods with their ringing chirp, and a smaller *Homopteron*, handsomely marked with white spots on a ground of dark madder-brown (*Eurymela speculum*), congregates in large numbers on the shoots of the "peppermint" and other gum trees, and by puncturing the tender bark, gives rise to a sweet white exudation resembling manna, by which name it is called in the colony. One of the most curious insects which I met with was a large pitchy-black earwig with asymmetrical forceps, each lobe of which was bent to the left, the right hand one so strongly as to cross the other; this species (*Anisolabis tasmanica*, Bormans), occurred only at the summit of Mount Wellington. There is, in general, a pleasing absence of the *Muscidæ*, which are such a plague in most parts of Australia, especially on the north-west coast; but I found them pretty troublesome at Launceston on one or two occasions.

A small species of scorpion, not above two inches in length, but reported to be very venomous for its size, is by no means rare under stones, and is sometimes found beneath loose bark, where also spiders of huge dimensions and ferocious aspect, miscalled "tarantulas," but I believe quite harmless, are constantly turning up to the exclusion of more worthy game wherever they are found. In damp grassy hollows

on Mount Wellington small but most bloodthirsty land leeches are sufficiently common to render a certain amount of precaution necessary before venturing into such places. The three species of snakes which are found in Tasmania (*Hoplocephalus superbus*, *H. curtus*, and *H. coronoides*) are all common, except the first, and all poisonous, the bite of the first two and larger species being sometimes fatal. The third, known as the "whip snake," is seldom more than a foot in length; it is, however, very active and vicious, especially in hot weather, and as it has a habit of harbouring under stones and loose bark, a good look out has to be kept for it when collecting.

It was originally intended that the "Penguin" should return to Hobart at the close of the present surveying season. Orders have, however, been recently received to proceed to Hong Kong in December, and to finish the commission in Chinese waters; so I write these notes with much regret that I shall have no further opportunity of making them more complete, by revisiting one of the most interesting and productive localities which it has ever been my good fortune to work in.

H.M.S. "Penguin,"

Roebuck Bay, N.W. Australia:

September 16th, 1891.

MELIANA FLAMMEA, &c.—NOTES OF THE SEASON.

BY F. D. WHEELER, M.A., LL.D., F.E.S.

The present year having proved (in my experience) an unusually good one for this species, it may, perhaps, be of interest to place on record a few facts with regard to it.

The exceptionally fine warm weather which we enjoyed during the spring led me to expect a good appearance of early species in the fens, and I accordingly made an effort to get out for some collecting.

My first night was May 24th, when the weather was at its best—very hot and close. I rode over to Ranworth and took boat, reaching the fen at dusk. *Panagra petraria* was abundant on the wing, but very little else; one specimen, however, of *M. flammea* occurred thus:—at dark I lit the attracting lamp, and worked till midnight, when I was compelled reluctantly to give up, having regard to the next day's school-work and the long journey home. During this interval twenty-four specimens of *M. flammea* had been secured. The curious feature of the thing is that with the exception of a solitary specimen of

S. venosa, it was absolutely the only *Noctua* on the wing. *P. petrarica* was abundant, and, perhaps, a dozen *Coremia unidentaria* occurred, but hardly anything else.

The next opportunity for entomological work was on Monday, June 6th, when I was on the Broads in the Hickling district, and spent the night near Horsey Mere. We selected for our camp a spot where the fen appeared to me particularly promising, and searched the ground diligently during the evening, but without result. There is nothing more striking to a novice at fen work than the contrast between the apparently utter absence of life during the day time, especially if the wind is at all chilly, and the profusion of moths that show themselves at night. In a fen nothing can be beaten out, as in a wood, the only effect of disturbance on a moth being to cause it to drop lower in the dense herbage. On this occasion, having a boat-load of boys on board, there was no room for attracting lamps, &c., and the only light was that of a wretched boat lamp, that just served to make darkness visible. We had, however, the pleasure of seeing *M. flammea* really common, flying at dusk all over the fen. My lamp was not powerful enough to attract them, and had an awkward knack of going out at critical moments, so that I only took about a score, most of which were worn, but we must have seen two or three times that number, almost all of them, however, during the first hour or so of dark. Nothing else of any interest was about, the most noticeable species besides *M. flammea* being the first brood of *Phibalapteryx lignata*.

My next visit to Ranworth was on June 21st, when the weather was unsuitable, the evening being clear and the sky cloudless, with the usual result of a slight fog over the lower ground. The night proved blank, two *Leucania pudorina* being about the best insects taken; hardly anything at all was on the wing—not even the midges.

A third visit, on July 1st, was more fortunate, the weather being good, with rain threatening. Very little, however, actually fell, and about midnight the clouds cleared off, and a slight fog put an end to sport.

The best captures were six *Senta ulvæ* (one spotted var.), but the ordinary run of midsummer fen insects were plentiful. *Acidalia immutata*, *Coremia unidentaria*, *Leucania pudorina* and *impura*, and *Chilo phragmitellus* were abundant, and *C. mucronellus* was not scarce (especially along the reed-beds by the river on our return), while, to my surprise, two *M. flammea* turned up, one of which was in very fair condition.

With regard to this species, my own experience leads me to consider it more local than its ally, *S. ulvæ*, but certainly more sary ʋful (at least occasionally) where it occurs, than the latter ever which ʃ habits, too, differ considerably. *Flammea* is found chiefly over the dryer parts of the fens, where the reed grows scattered and more or less dwarfed. It flies with a fairly rapid flight, intermediate between that of a *Noctua*, like *L. impura*, and that of a *Geometer*, rarely rising to any height above the herbage, into which it drops on the least alarm, when it is very difficult to detect. In fact, this habit ʃs its chief protection, as it flies usually below the level of the tops of the reeds, so that the net, striking these, is apt to alarm the moth and cause it to drop. When, however, it comes to an attracting lamp raised to a height of six or seven feet, it is very easily netted.

S. ulvæ, on the other hand, is confined to the larger reed-beds, where they have not been cut, so that old reed is mixed with the new. Hence it is often more easily collected from the water than from the land. In flight it has considerable resemblance to a *Chilo*, but there is sufficient difference to render it fairly easy to recognise the species on the wing. I have repeatedly, when working the reed-beds with a lamp, seen this insect either softly flutter through the reeds or crawl up the stems, and settle on one of them in full light of the lamp. In such case they are tantalizingly hard to secure, as the stiff reed-stems give ample warning of the approach of a net.

The larva of *S. ulvæ* seems to be yet unknown in this country; Treitschke says that it was found at Darmstadt in August, feeding in the reed; that it spun up at the end of September to hibernate, appearing again in the spring, and feeding for two months, and that it finally pupated within the reed. All this is just what one would expect, but hitherto my efforts to find the larva here have been unsuccessful, though, in the absence of a published description, it is possible that this species may have occurred among larvæ which I have taken and failed to rear.

Of the larva of *M. flammea* my first experience was in 1878, when I took a number of caterpillars feeding externally on reed at night, and noticed among them three or four rather prettily marked, and reminding me somewhat of (the larva of) *Leucania straminea*. These pupated in the leaves of the reed in September, and in 1879, from May 20th to 31st, I reared from them what I believe to have been the first specimens of *M. flammea* bred in this country. I think it was three years later that Mr. Fletcher found the larva fairly

common at Wicken, where he obtained it by sweeping at night, by which means it has been taken there regularly since that time.

It was described in the Ent. Mo. Mag. for August, 1883, by Mr. Buckler, and is figured in vol. iv of the Larvæ of British Butterflies and Moths, in process of publication by the Ray Society. I learn that this larva was rather more plentiful than usual last autumn in Wicken fen, but a considerable proportion of them were affected by Ichneumons.

Norwich: *July*, 1892.

ON THE HABITS OF *STAUROPUS FAGI*.

BY W. HOLLAND.

Last year I thought it was accidental to find *Stauropus fagi* resting so often on small trees, because we have a large proportion of small trees in our close cut beech woods. This year, however, it has been my fortune to see more of this species than I have ever seen before, and I find it is not a matter of accident where they rest. They decidedly make a selection of the smaller trees and saplings to sit upon. It is unusual to find them—the males in particular—on anything larger than a small scaffold-pole, and the more favourite tree is from the size of a hop-pole to that of a walking-stick. The small tree need not be a beech, a young ash, thorn, nut bush, dead stick, in fact anything which stands upright in the beech wood will do for *fagi*, so that it is not too large. The females are not found quite so constantly on young trees, perhaps because they are less active than the males; but when once they have flown these also seem to prefer the smaller trees. This selecting of trees may be a protection to the moth. The trunks of the large beech trees are very smooth and clean, and a large moth like this is conspicuous on them, but the little trees are rugged, and covered with knobs, large in proportion to the size of the tree, where branches have been taken off to make the tree grow shapely; and *fagi*, as it sits closely pressed to the tree, carefully balanced to the perpendicular, with its wings folded in a triangular shape, the hind-wings projecting beyond the fore-wings, after the fashion of *Gastropacha quercifolia*, looks wonderfully like one of these knobs. The blackish variety, in particular, is so like a knob on the tree that a close examination is needed to detect it. The moths generally rest comfortably within reach; sometimes, however, they are high up, but a touch with a stick brings them tumbling to the ground;

occasionally they are found at the bottom of the tree. Though *fagi* is a strong flyer, it does not appear to often go far from its birthplace. The more lethargic female keeps the males near home. From its habit of assembling, where one moth is found others are generally near the spot. Sometimes I have taken four or five specimens from one small tree, or eight or ten on a group of young trees close together. The moths do not all emerge at one time. The first was taken this year on May 12th; I found three to-day, July 6th, and they were to be had by searching any day between those dates, most plentifully the first week in June. Where a moth is taken to-day, if no others are then to be found, search the spot again to-morrow, and often three or four others will be there. I have several times found a beautiful freshly-emerged specimen on the same tree I had found one on about a month before. With the search confined mostly to the young trees, the concentration of the broods, the assembling habits, the succession of emergences, and the partial second brood in October, this species should not be hard to obtain.

Reading: *July*, 1892.

NOTES ON SOME BRITISH AND EXOTIC COCCIDÆ (No. 23).

BY J. W. DOUGLAS, F.E.S.

PLATE III.

PROSOPOPHORA, *n. g.*

♀ adult. Scale wholly waxen, base closed; surface with granulose raised lines; no anal cleft or tubercles, anal orifice close to the margin; margin entire, no fringe. Antennæ of eight joints. Mentum monomerous. Legs atrophied. Anal ring with ten hairs. Last segment of the body deeply emarginate, with its lateral lobes not, or scarcely, extending beyond the line of the circumference.

♂ adult. Scale of the same material and pattern as the ♀; antennæ of ten joints.

PROSOPOPHORA DENDROBII, *n. sp.*

♀ adult. Scale (fig. 1) hard, dull, ashy-brown, broad-oval, slightly convex, disc with a large ring parallel to the margin, composed of large, connected granules, the space enclosed intersected lengthwise by a median carina, which extends from the anterior margin of the scale to the anal orifice, and is crossed by several (5—6) raised granulose lines, of which the posterior are often indistinct or obsolete; the wide area between the ring and the margin also crossed by similar, equidistant, straight lines (8—9 on each side of the scale). All the raised portions are whitish, and overlay pores through which the granulose matter was doubtless excreted in a spumous state; the edges of the oval anal orifice are also whitish. The waxen plate closing the base of the scale yellowish, very thin and delicate, is attached to the

margin all round, and anteriorly has an orifice for the extrusion of the rostrum. The insect when first restored was purplish-brown in colour; when alive it had doubtless filled the scale, but in its dry state it was entirely shrivelled, and lay in the anterior region, the rest of the scale was more or less occupied by withered larvæ. Antennæ nearly cylindrical, of eight joints (fig. 1b), the relative length of them not very constant, the 5th sometimes not so long as represented, and the 8th much smaller; all are hairless except the last, which has three strong curved hairs on the apex. In a few specimens there were but six or seven joints only (figs. 1bb), the result, probably, of parasitism of the insect. Eyes small, inconspicuous. Rostrum large, filaments very long. On the under-side (fig. 1a), the body has, on the abdomen, two rows of five perforated discs (fig. 1c), and, anteriorly, three similar ones in a triangle. The deep emargination of the last segment results in a wide lateral lobe on each side, terminated by a strong hair, and bearing several long, tubular spinnerets, with orifices shaped like deer's feet (fig. 1d), and also, near the margin, some blunt spines (fig. 1e). Anal ring large, with ten hairs, above it is a dark chitinous arch or loop, which in some specimens appears detached, but is really a part of the segment (figs. 1f and 1g).

Length of scale, 3—3·5 mm.; breadth, 2·5 mm.

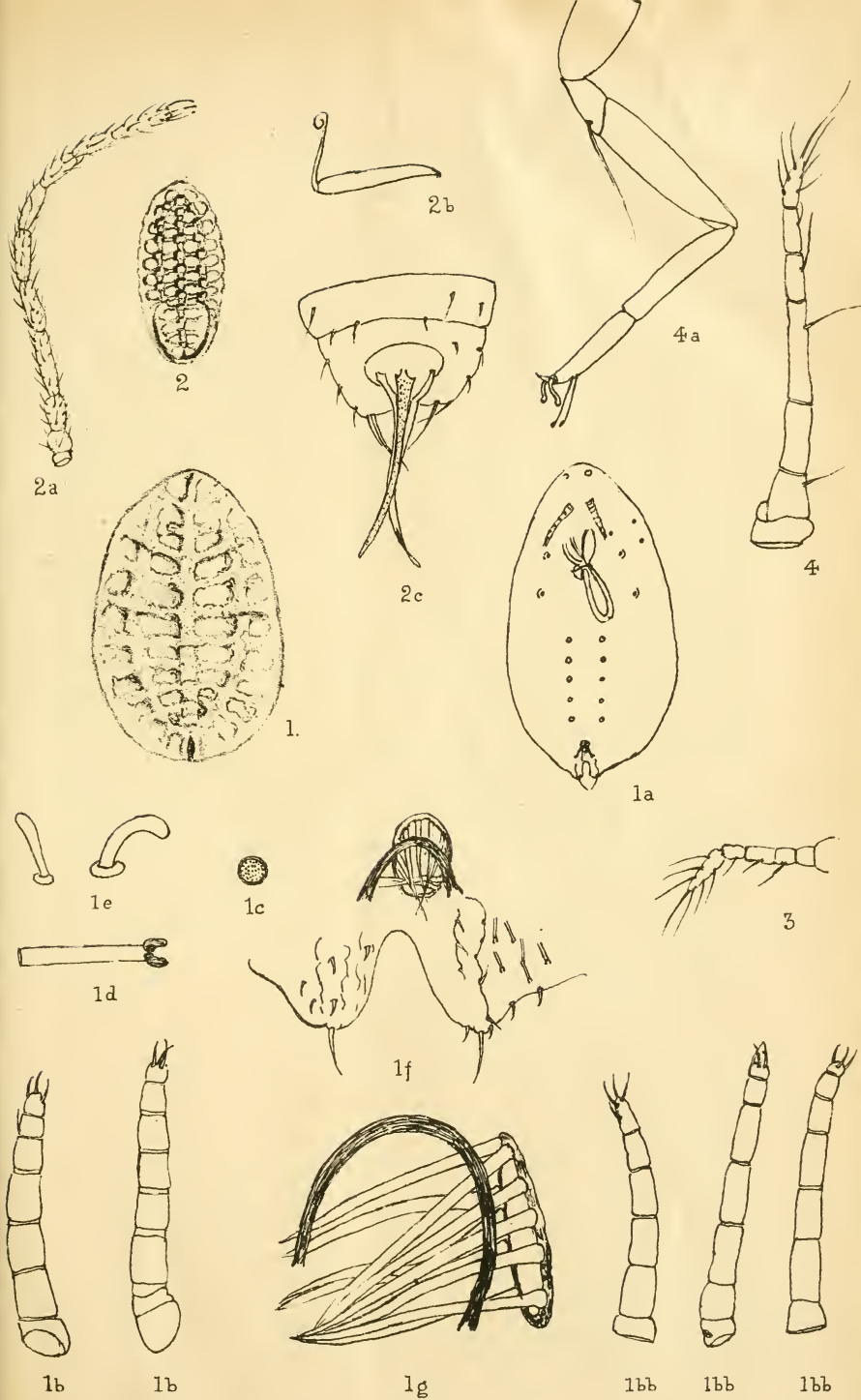
♂ adult. Scale (fig. 2) of the same pattern as the ♀ (not thin and glossy, as in *Lecanium*), but the raised lines are stronger, and, posteriorly, without interruption of the pattern, the upper-side is developed in the form of an ovoid plate, which is free, except at its broad flexile base, evidently to permit the escape of the imago. The imago is too much dislocated to represent entire, the buccal ocelli are large. Antennæ (fig. 2a) of ten joints, thickly set with short, curved hairs, and three at the apex slightly clubbed. Wings ordinary; halteres (fig. 2b) terminated by a single curved hair. Legs ordinary. Fig. 2c represents the anal segment and genital armature.

Length of scale, 2 mm.

Larva. Antennæ of six joints, with long hairs (fig. 3). The bodies were so broken that they could not be restored or figured.

In October, 1891, Mr. S. J. McIntire sent, as just received from Mr. Jenman, Superintendent of the Botanic Garden, George Town, Demerara, some pieces of the stems of *Dendrobium calceolaria*, to which several of these *Coccids*, dead and dry, were tightly adherent. *Prima facie* they had the appearance of *Lecanium*, but this was deceptive, for on examination they proved to have such complex characters, that they would not enter any indicated genus, and for the same reason their relationship and position in any group of *Coccidæ* are not at present possible for me to assign. The ♂ scales were mostly empty, but in a few a dead imago, fully developed, remained.

The first lot of ♀ scales treated in the ordinary way, by boiling in solution of caustic potash, were entirely dissolved, showing that they were wholly cereous. Subsequent experiments with other scales, under the careful manipulation of Mr. Newstead, gave the very singular results above stated, which were constant in the many ex-



amples examined, and I am very greatly obliged to him for the pains he has taken to obtain them, all the more that circumstances have unfortunately precluded me from attempting the work; and I am also greatly indebted to him for transferring his figures to the plate.

LECANIUM BEGONIÆ, *n. sp.*

♀ adult. Scale jet-black, under a high power seen to be covered with contiguous, minute, oval, yellowish dots, shining, smooth, convex, broad-ovate, or in some instances oval, being more rounded anteriorly, sides straighter, and disc humped; the margin slightly extended, recurved, and finely punctured (up to the penultimate state the colour is brown); anal cleft closed, the point above it very small, yellowish. Antennæ of seven joints (fig. 4); the 1st broadest, short; 2nd one-third longer; 3rd twice the length of the 2nd; 4th one-third longer than the 3rd, with a constriction simulating a joint at two-thirds of the length, whence a long hair projects; 5th and 6th equal, each less than half as long as the 4th, and with one hair; 7th about as long as the 3rd, pointed, sides gradate, with several hairs. Legs (fig. 4a) long; trochanter with one long hair; tarsi three-fourths the length of the tibiæ; digitules normal. Length, 3—4 mm.

The oval examples, especially, very much resemble *L. nigrum*, but, as will be seen by reference to the description and figure, Ent. Mo. Mag., ii, n. s., p. 95, fig. i, there is great difference in the proportion of the joints of the antennæ, which character was noticed in all the specimens of each species that were examined; in the present species also there are but seven joints instead of eight.

Received in October, 1891, on the stems and under-side of leaves of a *Begonia*, from the Botanic Garden at George Town, Demerara.

EXPLANATION OF PLATE III.

Prosopophora dendrobii, ♀, fig. 1, scale; 1a, body, under-side; 1b, antenna, eight joints; 1bb, ditto, six and seven joints; 1c, perforated disc on ventral surface; 1d, tubular spinnerets; 1e, blunt spines; 1f, terminal emargination and anal ring; 1g, anal ring and arch, more enlarged.

„ „ ♂, fig. 2, scale; 2a, antenna; 2b, halter; 2c, anal segment and genital armature.

„ „ Larva, antenna, fig. 3.

Lecanium begonix, ♀, fig. 4, antenna; 4a, leg.

153, Lewisham Road, S.E.:

December, 1891.

Postscript, *July*, 1892.—Although characters derivable from the larva are wanting, I am now inclined to believe that those of the adult state, in both sexes, indicate that this insect belongs to the Family *Lecanodiaspidæ*, Targ.-Tozzetti.

ANNOTATED LIST OF BRITISH TACHINIDÆ.

BY R. H. MEADE.

(Continued from page 182).

36.—PHOROCERA, DSV.

Gen. ch.—Eyes hairy; facial angle rather oblique; frontalia wide in both sexes, but rather narrower in the male than female; facialia ciliated to above the middle of the face; antennæ long, with third joint from four to eight times the length of the second; arista generally long; abdomen mostly with both marginal and discal setæ; wings with the first posterior cell ending at some distance before the point of the wing, and outer cross vein placed nearer to the bend of the fourth vein than to the little cross vein.

- | | | | |
|----|------|-----------------------------------|-----------------------------|
| 1 | (8) | Palpi yellow or testaceous. | |
| 2 | (3) | Fourth vein bent in a curve | 1. <i>concinata</i> , Mgr. |
| 3 | (2) | Fourth vein bent at an angle. | |
| 4 | (5) | Palpi very small..... | 2. <i>filipalpis</i> , Rnd. |
| 5 | (4) | Palpi of ordinary form. | |
| 6 | (7) | Scutellum black | 3. <i>casifrons</i> , Mcq. |
| 7 | (6) | Scutellum rufous | 4. <i>assimilis</i> , Fln. |
| 8 | (1) | Palpi black. | |
| 9 | (10) | Fourth vein bent in a curve | 5. <i>unicolor</i> , Fln. |
| 10 | (9) | Fourth vein bent at an angle..... | 6. <i>cilipeda</i> , Rnd. |

P. CONCINNATA, Mgn.

Machæra serriventris, Rnd.

Frontalia with central stripe piceous, and rather narrower than the sides, which are yellowish-white, with dark reflections; cheeks nude, and with face luteous; facial setæ extending more than half way up; palpi filiform, yellow; antennæ grey, with third joint from four to six times longer than second; arista very long and capillary, thickened for about two-fifths of its length; thorax covered with grey pubescence, and marked with four stripes, the outer ones wider than the inner ones; post-sutural dorso-central bristles four in number; scutellum grey; abdomen dull grey, first segment black, the others with black reflections, black hind margins to segments, a narrow dorsal stripe, and both discal and marginal setæ; the female has the ventral margins of the segments pressed together, so as to form a projecting and ciliated keel beneath the body, towards the end of which there is a curved, pointed, horn-like process, extending forwards; wings with the fourth vein bent in a curve, and first posterior cell terminating near the apex; legs black, hind tibiæ irregularly ciliated on outer sides. Not common; it has been bred by Mr. S. Saunders from *Abraxas grossulariata*, by Mr. Billups from *Vanessa urticæ*, and by Mr. Bignell from *Acronycta tridens*.

P. FILIPALPIS, Rnd.

The characters of this species, according to Rondani, are very variable, so I

shall describe them as they occur in the single example which I possess. The point which at once distinguishes this species from all the others is the diminutive state of the palpi, which are pale yellow in colour, and very short and small; the forehead is slightly prominent, the frontal stripe piceous, and rather narrower than the sides of the frontalia, which are grey with a rufous tinge; fronto-orbital bristles extending to below the root of the arista; cheeks white and bare; antennæ with third joint thick, and fully six times the length of the second; arista with basal third thickened; facialia armed with strong ciliæ for two-thirds of the way up; thorax cinereous, with four even black stripes; scutellum grey; abdomen cinereous, with posterior margins of segments black; setæ on both disc and margins; wings with apical cross vein straight, and ending near apex, fourth vein bent in a blunt angle, outer cross vein a little sinuous, and placed rather nearer to the angle of the fourth than to the little cross vein; legs black; length of specimen about 6 mm. Very rare.

P. CÆSIFRONS, Mcq.

Chetogena assimilis, Rnd.

Forehead prominent, frontal stripe black, and wider than sides of frontalia, which are slate coloured; cheeks white, with grey reflections, and ciliated with a few fine hairs; antennæ with first joint partly rufous, the second and third grey, the latter about four times the length of the former; arista long, with basal third thickened, and rest extremely slender; palpi yellow, grey and thin at the base, and sub-clavate at the end; facialia ciliated for about two-thirds of the way up; thorax covered with dark grey pubescence, and marked with four black stripes of about equal widths, which become indistinct on the hinder portion; outer dorso-central bristles, three in front and three behind the suture; scutellum dark grey, sometimes a little rufous at the tip; abdomen cylindrico-conical, with black and white tessellations, and armed with both discal and marginal setæ; anal segments of male incurved, and sometimes partly rufous; wings with apical cross veins deeply curved; legs black, hind tarsi ciliated beneath with yellow hairs. Not uncommon. This species varies very much in size.

P. ASSIMILIS, Fln. et Schnr.

Chetogena grandis, Rnd.

Fallén included this, together with the former species, under the name *assimilis*, stating that the scutellum was either ferruginous or black; but the presence of other points besides this show that he mixed two distinct species together; I shall, therefore, follow Macquart and Schiner, naming the one with the black scutellum *P. cæsifrons*, and the other *P. assimilis*.

This species is usually more robust than *P. cæsifrons*, the forehead is very prominent, the frontal stripe rufescent, the frontalia are wider than in *cæsifrons*, the arista is thickened nearly to the middle, and has the extremity a little pubescent; the apical cross veins are more oblique and less curved than in *cæsifrons*, the anal segments of the male are less incurved, the scutellum is almost entirely rufous; all the other characters are similar to those of the former species. Rare.

P. UNICOLOR, Fln.

Shining black, almost immaculate; frontal stripe dull brown, rather wider than

sides of frontalia, which are blue-black and glabrous; antennæ black, with third joint robust, and five or six times longer than second; arista thickened to the middle; facial setæ extending only half way up the facialia; palpi black, large, and clavate at the ends; thorax black, with whitish-grey shoulders, four indistinct stripes, and three post-sutural outer dorso-central setæ; abdomen black, with slight cinereous reflections, and setæ both on the disc and margins of the segments; wings with fourth vein bent in a curve, and apical cross vein straight; legs black, hind tibiæ ciliated on outer side with short but even bristles. Rare; I have only seen one specimen, which was sent to me from Norfolk by Mr. Bridgman.

P. CILIPEDA, Rnd.

pavida, Mgn. ?.

pumicata, Zett. et Mcq. ?, *non* Mgn.

Blue-black, with hoary pubescence; eyes long; chin short; frontal stripe rufous or black, about equal in width to sides of frontalia, which are grey with bluish reflections; cheeks bare, pale grey with dark reflections; facial setæ large, and rather far apart, extending fully two-thirds of the way up the face; antennæ with the third joint four or five times as long as the second; arista thickened to a little beyond the centre, and having a fine capillary extremity; palpi black; thorax hoary, with four very fine black stripes, and having four post-sutural outer dorso-central bristles; scutellum with black base and red margin; abdomen oval, blue-black, with hoary bands round the front parts of the segments, sides of the second segment red in the male; both discal and marginal setæ; wings with apical cross vein a little curved, and outer cross vein sinuous; legs black, posterior tibiæ piceous or testaceous, and hind tibiæ ciliated along their outer surfaces with an even row of bristles, together with one long seta near the middle. Generally distributed.

P. pumicata, Mgn., is recorded as British, but I have not seen an example; all the specimens so named that I have examined have been similar to those of *cilipeda*, having the hind tibiæ more or less rufescent, and ciliated with a somewhat even row of bristles; I am, therefore, inclined to believe that these two (so-called) species are only varieties of one. *P. frontosa*, Mgn., has also been recorded as British, but I have not been able to see a specimen.

(To be continued.) 233

CONCERNING *HEMIMERUS TALPOIDES*, WLK.

BY D. SHARP, M.A., F.R.S., &c.

Although this insect itself is scarcely known to entomologists, yet its reputation as a sort of entomological conundrum is almost world wide; it has been stated on good authority to form a separate Order of insects, *Diploglossata*, and it has even been said that it cannot be classed in the Insecta at all, but must be looked on as the type of an allied class. A few months ago I had occasion to look at the specimens in the British Museum, and from their superficial appearance I ventured to prophesy that the species would prove to be a

parasitic insect belonging to the Order *Coleoptera*. I am pleased to see that the first part of the prophecy has proved correct: Dr. Aurivillius having announced its parasitic habits in the part recently published of the *Entomologisk Tidskrift* (xii, p. 174). As regards the second point, I may say that though I have had no opportunity of studying the insect thoroughly, yet I can see nothing in it foreign to the Order *Coleoptera*, except the existence of elongate anal styles. It would, however, be impossible to exclude it from the *Coleoptera* for that reason, and I shall not be, as I have said, at all surprised if the systematic position of the insect be ultimately decided to be in the *Coleoptera*, as a separate family to be placed near *Platypsyllus*. This remark is founded on the supposition that when the structure of the mouth is fully understood, it will be found that the supposed outer labium is the mentum which has overgrown the true labium, so that the latter appears to be transferred to the interior of the mouth. The modification of the mentum for covering the parts of the mouth in the *Coleoptera* are numerous, so that one in which it should quite overlap the labium is by no means incredible. Of course this supposition will be proved to be erroneous, if it should be found to be really the case that this outer lip is palp-bearing, as well as the inner one. The parasitic habits will render the life-history difficult to work out completely, but there should be little difficulty in discovering the larva; if this should prove to be of the type of active Coleopterous larvæ, this would go far to settling the position of the insect.

Cambridge: *July 4th*, 1892.

NOTES ON *COLEOPTERA* IN THE NORTH OF IRELAND.

BY REV. W. F. JOHNSON, M.A., F.E.S.

Among some *Coleoptera* sent to me for determination by Mr. W. D. Donnan, of Holywood, Co. Down, I found a curious *Philonthus* which I referred to Canon Fowler, and subsequently to Dr. Sharp, who pronounced it to be an abnormal form of *Ph. succicola*. It has four punctures on one side of the thorax and three on the other on the dorsal series, and has besides the whole thorax finely and densely punctured. It was taken by Mr. Donnan on Holywood Hill.

The correspondence about this beetle reminded me that I had a curious specimen of *Ph. varians* which I took at Bundoran in 1890. I accordingly forwarded this to Dr. Sharp, and he informs me that it is a most remarkable specimen, as it has a puncture short in the dorsal series on *both* sides of the thorax, a condition which Dr. Sharp

has not met with before in a European species. Another specimen which I took in a hotbed in my garden has the elytra colourless, giving it a very curious appearance. Dr. Sharp considers that this is not merely the result of immaturity.

I have to record *Stenolophus elegans* from Lowry's Lough, unfortunately only a single specimen occurred; *Oethebius rufimarginatus* in flood rubbish at Drummanmore; *Philonthus carbonarius*, in moss from Lowry's Lough and Drummanby Lake; *Quedius maurorufus*, in moss from Loughnashade; *Scaphisoma agaricinum*, sweeping furze bushes at Lowry's Lough on June 9th; *Crepidodera rufipes*, quite a number on *Vicia* at Drummanmore, I got a single specimen several years ago near the same place; *Ochina hederæ* and *Telephorus nigricans*, taken by Mrs. Johnson by sweeping in Loughgall Manor Demesne; *Ceuthorrhynchideus floralis*, in moss and on flowers; *Gymnetron villosulus*, two specimens at Lowry's Lough by sweeping herbage on the margin, I took each on a different day, and though I swept over the place repeatedly, I could not on either occasion get any more—looking for them on the herbage was out of the question, for besides the difficulty of seeing them, I had a certain distaste for kneeling down in four inches of water; *Limnobaris* (*Baridius*) *T-album* has been plentiful at Lowry's Lough last month, and *Litodactylus leucogaster* has abounded since the end of April; I have also taken several *Phytobius canaliculatus*, and a couple of *Bagous lutulosus*, all by sweeping various water plants. On May 26th I took a specimen of *Gastroidea polygoni* on *Ranunculus aquatilis* at Lowry's Lough; there was no *Polygonum* visible, in fact, it is only now showing itself in the lake. On May 27th I took a large number of *Byturus tomentosus* on barberry flowers in the garden at Derrynoose Rectory. *Galerucella nymphææ* and *G. lineola* have been very abundant at Lowry's Lough, the latter on willows and the former on everything, including water.

A few days ago I captured several *Crepidodera helixines* on willows near Grange, but it was very troublesome work beating each separate branch. On the whole the season so far has been a good one for *Coleoptera*, in spite of the extraordinary variations of temperature and weather.

Winder Terrace, Armagh :
July 1st, 1892.

[The specimen of *Philonthus* referred to above by Mr. Johnson appeared to me to be either an abnormal *succicola* or *carbonarius*; I am not quite convinced now, as the penultimate joints of the antennæ appeared hardly transverse enough for *succicola*.—W. W. F.]

Chrysis neglecta over two years in the larval and pupal stages.—In September, 1889, Dr. Chapman very kindly sent me nests of *Odynerus spinipes* with its parasites, *Chrysis bidentata* and *neglecta*; the first two came out the following summer, but *neglecta* did not appear until June 24th, 1892. In March I opened one of the cocoons, and saw the larva was still alive but much contracted; I then gave the sand, in which were the cocoons, a good watering, and left the flower pot with its contents exposed to the weather. At the beginning of June I removed them indoors and exposed them to the sun; with the result of this treatment I have bred three.—G. C. BIGNELL, Stonehouse, Plymouth: June 27th, 1892.

Pelobius tardus, Herbst, in Yorkshire.—In my "Coleoptera of the British Islands," vol. i, p. 159, I have recorded this insect as being "doubtful as a Yorkshire species;" I have, however, just received a specimen from Mr. Walter F. Baker, of Hull, who informs me that the species is fairly common in the Wayrant ponds near Withernsea. This is, apparently, the most northern authenticated record for this insect; it has once been recorded by Mr. Hewitson from near Newcastle-on-Tyne, but Mr. Bold, in his Catalogue, expressly comments on this record as probably erroneous, and it has never since been met with in the locality. My friend, the late Mr. Garneys, recorded the species as once taken at Twyford, near Repton, Burton-on-Trent, but I never found it in that district, and it must have been very rare. I have never heard of its occurrence in Lincolnshire; but if it is common at Withernsea, it will probably be found on this side of the Humber, if worked for.—W. W. FOWLER, Lincoln: July 11th, 1892.

Harpalus obscurus, F., &c., at Swaffham Prior, Cambridge.—In vol. i (second series) of this Magazine, p. 83, Mr. H. R. Tottenham recorded the capture of three specimens of this exceedingly scarce species. On June 24th last I was staying with Dr. Sharp at Cambridge, and found that he and Mr. Tottenham had obtained a few more specimens, for the most part immature; as we had two or three hours to spare on the afternoon of June 25th, Dr. Sharp proposed that we should go and look for the beetle, which we accordingly did, and were fortunate enough to take a good series in excellent condition. In a note appended to Mr. Tottenham's record above referred to, I have mentioned the fact that Dr. Power told me the species had been distributed in old days as *H. sabulicola*, which we also took in the same locality, in company with *H. obscurus*; but in life it is very different, and may much more readily be mistaken at first sight for *H. ruficornis*, in fact, we were several times deceived by the latter insect. Besides these two species Dr. Sharp took a single male example of *H. tenebrosus*, and I found one *H. azureus*; *H. brevicollis* (*rufibarbis*, Brit. Cat.) and *H. rectangulus* (*puncticollis*, Brit. Cat.) were common, as also was *Olisthopus*, and among other beetles taken may be mentioned *Badister humeralis*, *Amara bifrons*, and *Cryptocephalus moræi*.

A few days previously Dr. Sharp had been to Monk's Wood to look for *Osphya bipunctata*, having been induced to do so by the fact that last year Mr. W. Bateson found a specimen close to Cambridge; the weather proved very unfavourable, but in the very short time during which he was able to work he found two specimens of *Osphya*, besides *Molorchus umbellatarum* and other things, which show that the Wood will well repay working.—ID.: July 12th, 1892.

Coleoptera taken in the New Forest in June, 1892.—The following are more or less interesting:—*Conopalpus testaceus*, *Asclera sanguinicollis* and *cærulea*, all the four species of *Grammoptera*, *Anoplodera sexguttata*, *Pogonocherus dentatus*, *Callidium violaceum*, *Clytus mysticus*, *Leptura scutellata*, *Podabrus alpinus*, *Elater pomonæ*, *Corymbites bipustulatus*, *tessellatus*, *metallicus*, and *holosericeus*, *Sericosomus brunneus*, *Balaninus turbatus*, *Orchestes ilicis*, *Silpha 4-punctata*.—A. J. CHITTY, 33, Queen's Gate Gardens, S.W. : July, 1892.

Coleoptera taken at Loch Awe, N.B., in June, 1892.—*Carabus arvensis*, *Pterostichus athiops*, *vitreus*, and apparently black *versicolor*, *Patrobus septentrionis*, *Agabus arcticus*, *congener*, and *nitidus* (*biguttatus*), *Elater nigrinus*, *Corymbites impressus*, *cupreus*, *tessellatus*, *quercus*, and the var. *ochropterus*, *Sericosomus brunneus*, *Telephorus scoticus*, *palustris*, and *elongatus*, the two latter in marshy places on the stems of grass and reeds. *Elongatus* does not appear to be a fir species in the locality. *Rhynchites cupreus* and *æneovirens*, *Elleschus bipunctatus*, *Otiorhynchus maurus*, *Orchestes avellanæ*, *Rhamphus flavicornis*, *Erirhinus æthiops* (taken at a height of 2000 feet), *E. tortrix*, *Gonioctena pallida*, *Clythra 4-punctata*, *Megacronus cingulatus*, *Anthophagus alpinus*, *Geodromicus nigrinus*, *Luperus flavipes*, *Aphodius lapponum*, *Coccinella 16-guttata*, and many other common things. Beetles were very abundant, especially on the flowers of the mountain ash and on young oaks. My stay being short, I was unable to work up the better species, so as to take them in any numbers.—ID.

Noctua triangulum at Lewisham.—At dusk on the evening of the 12th inst., I found an example of this moth sitting on the wall of a lower room in my house, within a few inches of a door opening into the garden. I do not remember having seen the species in this district so near London in my moth-collecting days, and since then most of the vacant ground has been covered with houses; so its present occurrence seems worthy of record. Of course there is the possibility that it may have been introduced with plants. Mr. Adkin informs me that he observed it on two occasions in this vicinity, both about twenty years ago.—R. McLACHLAN, Lewisham, London : July 16th, 1892.

Colias Edusa.—I attended a Meeting of the Belgian Entomological Society at Brussels on the 2nd inst., and made enquiries as to *C. Edusa*, with the result that no Member present had noticed anything at all unusual this year with regard to that insect. Readers of this Magazine will probably remember a somewhat analogous experience recorded by myself and Prof. Meldola in connection with the autumnal abundance in 1877. See Ent. Mo. Mag., vol. xiv, pp. 65 and 110.—ID. : July 14th, 1892.

Colias Edusa, &c., in Gloucestershire.—During the last week in May I several times noticed *Vanessa cardui* in the garden, and *Plusia gamma* was very numerous. At the end of the month I took a drive through a portion of North Gloucestershire and the borders of Oxfordshire, and here also *V. cardui* was continually passing us along the road sides. Returning home the first week in the present month, I found *V. cardui* very abundant all round the neighbourhood, and *Plusia gamma* got up

under our feet wherever we went. *Colias Edusa* is also on the wing; I first saw it on Whit Monday, and once or twice since. Perhaps we shall have a repetition of the year 1877, when these two butterflies were in such profusion in the autumn. The weather is most brilliant.—V. R. PERKINS, Wotton-under-Edge: *June 11th*, 1892.

[The common occurrence of *C. Edusa* in the south-east of England this year is so universally acknowledged as to render it unnecessary to publish special records; information on the subject from more outlying districts is of value.—EDS.].

Colias Edusa in Gloucestershire.—Yesterday I saw a specimen flying along the road between this place and Cranham, and my companion (Mr. Fenwick) who was on in front, caught a male in fine condition. *C. Edusa* in the western Midlands is not frequent, even in the autumn of a "good season." I last saw *C. Edusa* in this district in June, 1877.—H. GOSS, Painswick, Gloucestershire: *June 22nd*, 1892.

Scent of the male Hepialus humuli.—I have succeeded in distinctly recognising a peculiar scent in this species. A few evenings ago three very fresh and perfect male *H. humuli* were brought in from the garden, evidently fresh from the pupa, and on carefully examining them beneath, the scent was distinguishable from all three, and from one it might be called fairly strong. That there should be no doubt on the point, I submitted the specimens to my young people, who at once noticed the perfume from the under-side. As far as one can judge, it arises from the curiously aborted and altered hind tibæ. To describe the scent is not easy. It is not, as in *H. hectus*, like pineapple, but more like a faint indication of the odour of the larva of *Cossus*, yet so faint and, so to speak, etherealized as not to be disagreeable. I have noticed it in every perfectly fresh male brought in since, but in one rather worn, to-night, it is barely perceptible.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E.: *July 6th*, 1892.

Lepidoptera at Armagh.—The season up to the present has been exceedingly bad. In March I got a few *Hybernia progenimaria*. Butterflies were very late, the first I saw being *Pieris rapæ* on April 8th. *Euchloë cardamines* did not appear till the middle of May. *Vanessa urticæ* I have not seen except in the larval stage, but on June 8th I saw two specimens of *Vanessa cardui*, which species I have not seen here for several years. *Pieris brassicæ* is quite plentiful, much more so than *P. rapæ* or *P. napi*. *Lycæna Alexis* and *Zygæna loniceræ* have made their appearance this week. The breeding cage produced a nice variety of *Arctia mendica* ♂, somewhat intermediate between the English and Irish forms, and a nice example of *Notodonta camelina*. The prevalence of cold at night has hitherto prevented sugaring.—W. F. JOHNSON, Winder Terrace, Armagh: *July 1st*, 1892.

Lepidoptera in the Mourne District.—During an Excursion of the Belfast Naturalists' Field Club on June 24th and 25th, the following *Lepidoptera* were taken. On the lower slopes of the mountains, *Eupithecia pumilata* swarmed on the granite boulders; *E. satyrata* var. *callunaria* and *E. minutata* were disturbed from the heather; a few *Scodiona belgaria* and *Melanippe tristata* were secured; and *Mixodia Schulziana* was fairly common in the afternoon; *Fidonia piniaria* and *Eupithecia lariciata* were abundant in Donard demesne; and single specimens of *Hadena adusta*, *Ellopiæ fasciaria* and *Coremia designata* (*propugnata*) were taken.

Time did not permit of much evening work, but a few *Eupithecia constrictata* and *Acidalia promutata* were netted along a thyme-covered stone wall at Kilkeel, and on the following evening *Emmelesia alchemillata* and *Aphomia colonella* at Bryansford. A good series of *Argyrotoxa Conwayana* was taken, but Micros were generally scarce, partly, no doubt, on account of the high winds prevailing.—C. W. WATTS, Belfast : June 30th, 1892.

Homoptera at Woking and Chobham.—The following species have occurred near here during the last two years, which I think are worth recording, as they have not, with a very few exceptions, been previously noted from this locality.

Gargara genistæ, Fab., not rare on broom.

Issus coleoptratus, Geoffr., ivy, Chobham.

Cixius similis, Kb., by beating, Woking; *Scotti*, Edw., by beating, Woking.

Liburnia vittipennis, J. Sahlb., Woking and Chobham, in damp places; *Fairmairei*, Perr., *leptosoma*, Flor., *discolor*, Boh., *exigua*, Boh., and *brevipennis*, Boh., Woking and Chobham, sweeping; *mesomela*, Boh., Woking and Chobham, heaths.

Stiroma albomarginata, Curt., Woking; *affinis*, Fieb., Woking.

Aphrophora salicis, De G., sallows, common, Woking.

Philæus campestris, Fall., not rare, sweeping, Woking.

Ledra aurita, Linn., on oaks, rare, Woking.

Pediopsis impurus, Boh., Woking; and *nassatus*, Germ., on sallows, Woking; *ulmi*, Scott, by beating, Woking; *cereus*, Germ., and *virescens*, Fab., on sallows, common, Woking.

Idiocerus adustus, H.-S., on sallows, common, Woking; *distinguendus*, Kb., white poplar, common, Woking; *lituratus*, Fall., and *confusus*, Flor., on sallows, common, Woking.

Accephalus albifrons, Linn., by sweeping, Woking.

Doratura stylata, Boh., Chobham, by sweeping.

Athysanus brevipennis, Kbm., by sweeping, Woking; *melanopsis*, Hard., by sweeping, Chobham.

Deltocephalus repletus, Fieb., and *oculatus*, Sahlb., by sweeping, rare, Woking; *punctum*, Flor., by sweeping, Chobham, one specimen; *Argus*, Marsh., by sweeping, Woking and Chobham, rare; *maculiceps*, Boh., by sweeping, Woking and Chobham, in damp places.

Thamnotettix attenuata, Germ., *subfuscula*, Fall., and *dilutior*, Kbm., by sweeping, Woking and Chobham; *prasina*, Fall., and *cruentata*, Pz., sallows, Woking and Chobham; *striatula*, Fall., common, by sweeping, on Woking Common, where the gorse, &c., had been burnt.

Gnathodus punctatus, Thunb., by sweeping, Woking.

Limotettix striola, Fall., damp places, Chobham; *4-notata*, Fab., and *sulphurella*, Zett., damp places, Woking.

Cicadula septemnotata, by sweeping near canal, Woking; *punctifrons*, Fall., dwarf sallows, Woking.

Dicraneura flavipennis, Zett., and *similis*, Edw., damp places, Woking.

Kybos smaragdulus, Fall., sallows, Woking.

Eupteryx vittatus, Linn., and *notatus*, Curt., by sweeping, Woking; *stachydearum*, Hardy, on *Teucrium*, Woking; *melissæ*, Curt., mint, Woking; *collinus*, Flor., by sweeping, Woking, one specimen; *signatipennis*, Boh., by sweeping, Woking, one

specimen; *auratus*, Linn., nettles, &c., Woking, not rare; *abrotani*, Dougl., southern-wood, Woking, in garden; *Germari*, Zett., Scotch firs, Woking; *pulchellus*, oaks, Woking.

Typhlocyba aurovittata, Dougl., and *cratagi*, Dougl., oaks, Woking; *geometrica*, Schr., sallows, Woking.

Zygina flammigera, Geoffr., by beating, Woking; *parrula*, Boh., by sweeping, Chobham; *scutellaris*, H.-S., by sweeping, Woking.—E. SAUNDERS, Woking: June, 1892.

Pulvinaria ribesiæ, Sign.—Mr. William Sang, of Bernard Castle, Durham, has sent for identification several scales of the female of this *Coccid*, with the large, white, silky ovisacs attached. He says, "In my garden a large red currant tree, trained on a wall for a space of three yards by four, has the branches entirely covered with the tenacious silken webs containing the eggs of the insects. On a score of adjoining red currant trees I have only found one other example. Nothing of the kind has been observed in the garden before the latter part of the spring of this year."

I have described this species in Ent. Mo. Mag., vol. i, n. s., p. 238, from specimens forwarded by Mr. S. L. Mosley, of Huddersfield, and Miss E. A. Ormerod has a long article about it, with illustrations, in her "Report" for 1889. The present appearance is worth notice, the locality not having been previously recorded.—J. W. DOUGLAS, 153, Lewisham Road: July 12th, 1892.

Ripersia Tomlinii, Newstead.—On May 17th last, under a stone on the Chesil Bank, I took four specimens of a *Coccid*, which puzzled me very much; but the June No. of the Ent. Mo. Mag. (p. 146) showed me at once that they were *Ripersia Tomlinii*. They were covered with white down, most of which got rubbed off in the box. There were no ants under the stone, but plenty of *Formica nigra* under other surrounding stones. I think my captures are worth recording, as Mr. Newstead's examples were from the Channel Islands.—C. W. DALE, Glanvilles Wootton: July 18th, 1892.

[This is of interest, not only as an addition to the list of British *Coccids*, but also as to the association of the species with ants, only in some cases at least. Mr. Newstead's examples were found in nests of ants (species not ascertained), and Mr. W. W. Smith records (p. 60, *ante*) the occurrence, in New Zealand, of a new species of *Ripersia*, which Mr. Maskell has described and figured as *R. formicicola*, in the "Transactions of the New Zealand Institute, 1891," p. 38, pl. viii, figs. 4—7, in allusion to its habitat in the nests of two species of ants (*Tetramorium*). It remains to be ascertained what is the species of ant with which our new *Ripersia* has been once found, and what is the nature of the connection between the ant and *Coccid*. There is one species of *Tetramorium* in Britain, and it may be the fostering one.—J. W. D.]

Orthezia urticæ, ♂.—With reference to the capture of this on May 25th, as recorded at p. 192, *ante*, I think that date is rather early. I took one last year on July 15th, and my father took one on June 29th, 1848.—ID.

[All these dates for the appearance of the males are to me inexplicable, because I have repeatedly found the females at the end of May, with the marsupium full of eggs or larvæ; what, then, were the males required for?—J. W. D.]

Aleurodes quercus, Signoret?—A few years ago I met with a species of *Aleurodes* on evergreen oak, larger than *A. prolella*, with pure, unspotted, white wings and yellow body, but I have never been able to find specimens of it since.—ID.

Introduction of Raphidia into New Zealand and Australia.—We learn from "Insect Life," vol. iv, p. 339, that a successful attempt has been made to introduce a Californian *Raphidia* (which species is not mentioned) into New Zealand. In California it feeds upon the larvæ of *Carpocapsa pomonella*, hence the object of its introduction into New Zealand. It was taken out, in the pupal condition, by Mr. Koebele, and a few were also sent to Melbourne in case of their ultimate failure in the other colony. It is a bold attempt, because it means the introduction of an insect, of a highly specialized Family, peculiar to the northern hemisphere. In Europe no one has looked upon *Raphidia* as a specially beneficial insect, and although the species are somewhat numerous, they are never found in sufficient numbers to play any important part in the department of Economic Entomology.—EDS.

The Proposed Rifle Range in the New Forest.—Persons interested in the New Forest will be glad to hear (if they have not already heard) that the vigorous opposition made, during the winter and spring months, to the Government proposal to acquire sites in the Forest for Rifle Ranges has been successful. In the first place the "Ranges Act, 1891," under the authority of which the *whole* Forest was at the mercy of the War Office, has been repealed; and subsequently the objectionable clauses of the "Military Lands (Consolidation) Bill, 1892"—by virtue of which the Government, although giving up, under pressure, their greater powers, might still have retained 800 acres of the Forest—have been struck out in Committee. Further, a clause has been inserted in the Bill, last mentioned, providing that "Nothing in this Act shall authorize the taking of any land in the New Forest, or shall empower the Commissioners of Woods to grant or lease, or give any License over, any land in the New Forest."

The result of the recent agitation, and the consequent repeal of the "Ranges Act, 1891," and the modification of the "Military Lands (Consolidation) Bill, 1892," is to leave the Forest in exactly the same position, legally, as it was in after the passing of the "New Forest Act, 1877," by which Act it was secured to the public as an open space. All Naturalists should feel much indebted to the Verderers and Commoners of the Forest, the Commons' Preservation Society, the London and Local Press, and to various individuals, for their continuous efforts to preserve the Forest for the public, and for a result which has been attained only after a long and uphill struggle, and the expenditure of a considerable sum of money.—H. Goss, Marazion, Cornwall: *July*, 1892.

[The thanks of the public in general, and of Naturalists of all classes in particular, are due to Mr. Goss for the energetic manner in which he set to work to combat and expose the insidious clause in a Bill that would have had the ultimate effect of depriving this country of what is looked upon as the People's Park. He sacrificed time, money and health in his endeavours to prove to the Government that the unanimous voice of our Naturalists was not to be despised. We hope to hear that the Members of our Natural History Societies will combine to recognise his services.—EDS.].

Review.

FURTHER COCCID NOTES : with Descriptions of New Species, and Remarks on Coccids from New Zealand, Australia, and elsewhere. By W. M. MASKELL, Corr. Mem. Royal Society of South Australia, Registrar of the University of New Zealand. (From the Transactions of the New Zealand Institute, 1891, pp. 1—64, Pl. i—xiii, 8vo). Wellington, N. Z. : 1892.

This treatise is as valuable and interesting as any of its predecessors, both on account of the descriptions and excellent figures of new species of extraordinary form and habits, and also of the special and general observations on *Coccids* by one of the most competent of the students of this Section of the *Homoptera*. Among the subjects noticed are "parthenogenesis" and "the power of gall making" in some of the species. "It is to be hoped," says the author, "that in time the problems connected with these matters may be attacked systematically; and that European entomologists, when they get tired of the already dreadfully worn grooves of the *Lepidoptera* and *Coleoptera*, will find the *Coccids* worthy of their best attention."

Obituary.

Prof. Hermann Carl Conrad Burmeister, Hon. F.E.S., was born at Stralsund, January 15th, 1807, and died, from the result of an accident, at Buenos Ayres, May 2nd, 1892. He was educated for the medical profession at Halle, and took his degree of M.D. By the advice of Prof. Nitzsch (of whom he was a pupil) he turned his attention to Natural History, and he succeeded his master, Prof. Nitzsch, in the chair of Zoology at Halle in 1842. But long before this he had become well known by his writings, especially on Entomology. His inaugural dissertation on the natural system of insects was written in 1829, and was rapidly followed by other papers, and also by a text book of Natural History. In 1832, when he was only 25 years old, appeared the first vol. of the "*Handbuch der Entomologie*," embodying the general subject, a monument of patience and knowledge; in 1836 this was published in an English form, translated by Shuckard, under the title of a "*Manual of Entomology*," an 8vo vol. of 654 pp., with 32 plates, mostly structural and anatomical. This work alone is sufficient to hand down the memory of its author as one of the most painstaking and original writers on Entomology that has ever existed. Three more vols. of the "*Handbuch*" appeared, the last in 1847, dealing with the systematic portion (which, however, was never fully completed), giving a succinct account of all known families and genera, and brief diagnoses of many known and new species. These diagnoses are often almost laconic in their brevity, but the author had a happy knack of defining important characters, in which he was largely aided by a method of analytical grouping. Amongst all his numerous writings we regard this work as his masterpiece, so far as Entomology is concerned. As other comparatively early separate works may be cited several educational books on Natural History, a *Hand Atlas of Zoology for Schools*, &c. (1835—1843), a *History of Creation* (1843), which passed through several editions, &c., &c. About 1850 failing health induced him to spend two years in Brazil, and he published an account of his journey in 1853.

Previously to this, and on his return, he was for some time a Deputy to the Prussian National Assembly. In 1857—60 he published the results of a journey in the La Plata States, and in 1861 he resigned his Professorship at Halle, and finally settled at Buenos Ayres, where he became Director of the Museum of Natural History, a position he held to within a few days of his death. He continued to publish much on Entomology, the insects of his new home affording ample materials for many valuable papers, both in the publications of the National Museum and in European Journals, and also a work on the physical features of the Argentine Republic, with an Atlas, which latter included (1879—1880) two parts devoted to the *Lepidoptera* of the country. The Royal Society's Catalogue of Scientific Papers enumerates no less than 164 articles (exclusive of separate works) from his pen down to 1883, and there have since been many more. Outside Entomology he devoted himself especially to Palæontology, a subject for which his adopted country afforded him almost inexhaustible materials, and in which the Museum he directed is very rich. His labours were duly acknowledged in Europe; in this country he was on the Honorary List of the Linnean (1851), Zoological (1863), and Entomological (1875) Societies. We believe he visited Europe so recently as 1890 (at the age of 83!).

In Burmeister, Natural Science, and Entomology in particular, has lost one of its most original and careful workers, of most versatile knowledge, most unflagging industry, and most untiring patience. He is succeeded in the post of Director of the Museum of Buenos Ayres by Prof. C. Berg, who was formerly attached to the Institution, and to which he has returned after a brief sojourn at Monte Video.—R. McL.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *July 11th, 1892.*—Mr. G. H. KENRICK, V.P., Vice-President, in the Chair.

The following exhibits were made:—Mr. Wainwright for Mr. G. W. Wynn, a specimen of *Stauropus fagi*, bred from a larva found at Wyre Forest last year; also a box containing some of Mr. Wynn's captures made during the recent visit of the Society to Sherwood Forest, including *Hadena contigua*, *Acronycta leporina*, *Agrotis suffusa*, &c. Mr. Kenrick, Sherwood *Lepidoptera*; also *Aplecta herbida* from Trench Woods, and a few Scotch insects, including a fine red variety of *Smerinthus populi*. Mr. P. W. Abbott showed a fine variety of *Arctia Caia* from a larva reared on coltsfoot, three specimens of *Stauropus fagi* from Wyre Forest, and a nice series of *Melanippe hastata* from the same place. Mr. W. D. Spencer showed a bred specimen of *Acronycta alni* from near Rugby. Mr. C. J. Wainwright showed *Diptera* taken at Sherwood this year, also a few taken in 1889, including *Xiphura atrata*, &c. Mr. A. Johnson showed larvæ of *Anthocharis cardamines* found on pods of the white rocket in his garden; they resembled the pods very closely. Mr. R. C. Bradley showed his Sherwood *Diptera*, and read a few notes upon them; they included two species of *Criorhina*, *floccosa* and *ruficauda*, *berberina* also being taken by Mr. Wainwright, also other nice *Syrphidæ*, and a few good "Daddies," including one perhaps new to the British list.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *April 29th*, 1892.—The President in the Chair.

Messrs. R. Freeman, B.A., E. B. Marriott, B.A., W. Bateson, M.A., and Dr. Sharp, F.R.S., were elected Members of the Society.

Mr. White exhibited *Plusia interrogationis* from Radnorshire, and a very dark variety of *Smerinthus tilia* taken at Cambridge. Mr. Moss, some good varieties of *Taeniocampa stabilis* and *instabilis*, and specimens of *Hybernia progemmaria* var. *perfusca*, *Venusia cambricaria*, &c., all from Windermere. Mr. Farren read a paper on Protective Resemblance. Several of the lichen-feeding species of *Lepidoptera* were mentioned as affording good instances; and the prevailing colour and style of markings of many species of Fen *Lepidoptera* as affording them protection by the likeness to dead reeds and sedge on which the moths are used to rest. The paper was illustrated by an exhibition of about 40 species of Fen *Lepidoptera*; also specimens of *Bryophila muralis* and *perla*, *Cleora lichenaria*, *Leptogramma literana*, and living larvæ of *Geometra vernaria* and *Cleora lichenaria*. Messrs. Moss, Frere, Jones and Farren continued a long discussion on the subject.

May 13th, 1892.—The President in the Chair.

Mr. Moss exhibited a very pale ochreous variety of *Amphidasis prodromaria*, *Noctua Dahlii*, *brunnea* and *umbrosa*, *Hadena rectilinea*, *Pachnobia rubricosa* and *leucographa*, *Taeniocampa gracilis*, &c. Mr. Farren, his collection of the "Thorns" and other *Geometrae*. Mr. Powell, a box of aquatic insects collected in the district. Mr. Bull, a very pale and a very dark variety of *Saturnia carpi*. Mr. Farren having attended the South London Entomological Society's Annual Exhibition on the 5th and 6th inst., described and remarked on some of the exhibits, making especial mention of Mr. Merrifield's cases illustrating the effects of temperature (during the pupal stage) on the colouring of certain species of *Lepidoptera*; and Mr. Jenner Weir's *Papilio Merope*, and the various forms of its female, with the different species of *Danaidæ* they mimic for protection. The subject of mimicry was discussed at some length, Messrs. Langdon, Bryan, Jones and Moss taking part.

May 27th.—The President in the Chair.

The Right Hon. Lord Walsingham, F.R.S., was elected an Honorary Member of the Society.

Mr. Freeman exhibited a very fine *Amphydasis betularia* var. *Doubledayaria* taken at Cambridge, a beech leaf found in Norfolk with a cocoon each of *Halias prasinana* and *Dasychira pudibunda* spun on it, and the two specimens bred from them, *Hypsipites ruberata* from Norfolk, and a large box of *Lepidoptera*, *Hymenoptera*, *Diptera*, &c., to show instances of mimicry. Mr. Bull, *Xylina semibrunnea*, *Eupithecia indigata*, and *Hypsipites ruberata*. Mr. Farren, a series of *Argynnis Paphia* var. *Valezina*, and other butterflies. Mr. Moss read some notes on different species of *Lepidoptera* which had come under his notice, chiefly at Liverpool and Windermere, the notes relating to the habits of *C. porcellus* and *Cossus ligniperda*, etc., being especially interesting.—WM. FARREN, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:

June 23rd, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. Tugwell exhibited varieties of *Argynnis Selene*, Schiff., *Melitæa Athalia*, Rott., and *Syrichthus malvæ*, L., var. *taras*, Meig. Mr. Tugwell remarked that he had been recently collecting with Mr. Porritt in Abbots Wood, Sussex, and in the course of eight nights he estimated they had seen 20,000 insects at sugar, and had taken 161 species of *Macro-Lepidoptera*. Mr. S. G. C. Russell exhibited a specimen of *Argynnis Selene*, and another doubtful specimen which, in the opinion of Messrs. Barrett, Tugwell and Frohawk, might be either *A. Selene* or *A. Euphrosyne*. Mr. C. G. Barrett showed *Spilosoma mendica*, Clerck, bred by the Rev. W. F. Johnson, of Armagh, and *Spilosoma menthastri*, Esp., bred from larvæ from Belfast. Mr. Frohawk, a long bred series of *Melitæa Cinxia*, L., showing considerable variation in depth of markings, and a male of *Pieris napi*, L., intermediate between the spring and summer forms, but approaching the spring form, bred from an egg laid June, 1891, larva pupated July and emerged June, 1892. Mr. Hawes exhibited ova, larvæ and pupæ with imagines of *Hesperia lineola*, and read a paper describing the earlier stages of the species. He stated that the larvæ of this species emerged in April, and fed for about eight or ten weeks, chiefly at dusk on *Triticum maritimum* and other coast grasses; the pupa was similar to that of *H. Thaumasia*, and was enclosed in a network of silk spun among the blades of grass.

July 14th, 1892.—The President in the Chair.

Mr. Oldham exhibited, among other species, *Dicycla oo*, L., and *Cymatophora ocularis*, Gn., taken at sugar in Epping Forest. Mr. C. Fenn, a fine series of bred specimens of *Psilura monacha*, L., from the New Forest, some of the specimens being very dark. Mr. R. Adkin, a pupa case of *Sesia scoliiformis*, Bork., from which the imago had emerged. Mr. Tugwell remarked that the pupæ of this genus, and particularly *S. spegiformis*, Fb., had the power of moving up and down the stem in which pupated; he had seen pupæ of *S. spegiformis* force their way through the bark about the eighth of an inch, where they should emerge, but, on a change of weather to cold, they would retreat back into the stem. Mr. Tutt said *Nonagria typhæ*, Esp., had the same power of going up and down the stem. Mr. Adkin said he had always heard that *S. chrysidiformis*, Esp., when it pupated, threw up a sort of tower; he had bred the species many times, and had never seen this. Mr. Tugwell said he had observed this on one or two occasions only in *S. spegiformis*. Mr. Barrett showed a fine series of *Stauropus fagi*, L., taken by Mr. Holland at Reading. Mr. Hawes, living larvæ of *Lycæna Ægon*, Schiff., feeding on *Ulex europæus*, and contributed notes, and a discussion followed. Remarks were made on the abundance of *Colias Edusa*, *Vanessa Atalanta*, *Plusia gamma*, *Deiopeia pulchella*, &c. Mr. Fenn stated he had taken *Catoptria juliana*, Curt., flying over apple trees in his garden on three successive evenings. Mr. Oldham referred to the small size of many oak-feeding species at Epping, which he attributed to the oaks having been stripped of their foliage by the larvæ of *Tortrix viridana*, L.—H. W. BARKER, Hon. Sec.

THE LARVA OF *DITULA WOODIANA* FEEDS ON *VISCUM ALBUM*.

BY JOHN H. WOOD, M.B.

Nothing in the present season has pleased me so much as the discovery of the larva of this interesting *Tortrix*. For years it had beaten me. The apple trees had been searched and beaten for it in vain; the gravid moth had been imprisoned within doors in glass vessels, and even sleeved on the living tree, and equally in vain, for no eggs were ever obtained. But all things, as the proverb goes, come to him who waits, and so one day in the middle of April the larva came at last my way. I was looking at a mistletoe bush (*Viscum album*) in the head of a large apple tree lying on the ground, and thinking more of bugs and Aphides than of Lepidopterous larvæ, when I caught sight of a curious little crescentic mine in one of the leaves, that I thought at first was Dipterous, till I opened it and found within an unmistakeable Lepidopterous larva. On searching further some half-dozen others were found, and all of precisely the same pattern. That it was something good, perhaps very good, I felt sure, and in a half joking spirit I labelled it there and then, *Woodiana*—a most happy guess, as the event proved. Under its inspiration ample supplies were collected. It proved easy to rear, and in all between thirty and forty moths were bred, nearly twice as many as had been taken in all the previous years, and with much labour, by searching the apple trunks in July.

The mine is a narrow gallery of uniform width, with one or more brown-margined openings for the discharge of frass; it forms a yellow halfmoon-shaped track on the under-side of the leaf, occasionally sending off a diverticulum, and is lined, in part at least, with silk. Such was the mine as I met with it in the middle of April, and such probably would be its appearance any time in the course of the winter. The larva it then held was very small with black head and plates, and of a clear yellow colour, indicating, I think, that it had not yet fairly woken up from hibernation, for within a week of being carried indoors active consumption of food had begun, and the yellow colour been exchanged for a delicate green one. With the growth of the larva the mine loses its characteristic crescentic shape, and becomes at first a narrow pouch, and ultimately a blotch, implicating the whole leaf if small, or a part only and the end almost invariably if large. In one part or other of the mine, and usually down the middle, is a narrow silken band of cross fibres on either wall, by the contraction of which the parts are wrinkled or arched into a sort of tube for the larva to rest in when not engaged eating.

To the last the larva remains a leaf-miner, a most exceptional habit for a *Tortrix*. So long as it is small, it can, and does occasionally, leave its mine and start a fresh one, but I doubt if it ever does this at large, when of good size; and should it be in the predicament of having cleared out its leaf prematurely, it tacks the point to an adjacent one just sufficiently to allow it to burrow in from the old to the new leaf. Clearly in all this the creature has learnt, by the experience of generations, to make the most of the peculiarities of the mistletoe leaf, using only the thick fleshy interior for food, and leaving the tough indigestible skin to serve for the walls of its chamber. A most clever proceeding, that contrasts with the method *Tortrix pyrastrana*, *heparana* or *ribeana* adopt when they select the plant, for these bring their ordinary leaf-spinning habits with them, and tying two leaves flat together feed upon the surfaces, in total ignorance of the trouble they might save themselves by taking but a single leaf and mining into its substance.

Whatever doubt there may have been, since Mr. Barrett first described the species in the pages of this Magazine, that it was merely a form of the willow-frequenting *Hartmanniana*, can scarcely any longer be entertained in the face of these facts, even though our knowledge of the larva of *Hartmanniana* and its habits be most imperfect. It does not seem possible that a species can have two such widely different food-plants as willow and mistletoe, without at the same time being more or less of a general feeder, and if there is one thing we do know about *Hartmanniana* it is that it is exclusively attached to narrow-leaved willows. But allowing the possibility of the two food-plants, there yet remains the difficulty of accounting for its very special habits on the mistletoe, for there is nothing in the willow at all analogous with the fleshy leaf of the mistletoe, and the larva, ought, therefore, to treat the latter in the way that *pyrastrana* or any other general feeder does. I should, however, mention that if a half-grown larva be removed from its mine, and be so placed that it can creep under a leaf or between two leaves, it first makes its retreat secure with a little spinning, and then proceeds to burrow into the leaf. This is a tedious process, taking three or four days, so that it is quite possible by repeated interruptions to prevent the larva ever accomplishing its purpose, and yet for it to remain healthy and produce the moth. Under these circumstances the ineffectual attempts to enter end in a general excavation of the surface, much as if one of the common *Tortrices* already mentioned had been at work; but I think no argument can be fairly drawn from this against the natural habit of the species, which is to mine the leaf.

The first larvæ ready to spin were supplied with loose moss, but so long were they in settling down, that it scarcely seemed to be the right thing. Afterwards I made small bundles of strips of bark, and placed the larvæ on them. Here they were thoroughly at home, and disappeared at once, making their cocoons between the pieces, or under some convenient ledge or bit of lichen. The cocoon is an elegant structure of white silk—outside is a roomy open network, and within the cocoon proper a closely woven fusiform chamber.

I have already mentioned the appearance of the larva at the end of winter—a small, yellow, cylindrical grub, with black head plates and legs; and its change of colour to a delicate green on resuming feeding. As practically no further change takes place beyond some deepening of the ground colour, a single description will suffice.

The full grown larva is of moderate proportions, with a tendency to slenderness if anything; it is somewhat attenuated behind and less so in front, and has a bristly look from the unusual prominence of the hairs. Colour, a pure and rather deep green; head shining black, with brown mouth parts; thoracic plate shining black, with a narrow green dividing line; anal plate also black, sometimes only spotted with black; spots small and blackish-green, emitting short white hairs; legs blackish or dark grey. When ready to spin it turns a still deeper green. Pupa uniformly yellowish-brown; of the usual *Tortrix* shape, having short wing cases, and a long, tapering, mobile abdomen, as pliant as a whip.

Tarrington, Ledbury:

August, 1892.

A COLLECTING EXPEDITION TO EAST SUSSEX.

BY GEO. T. PORRITT, F.L.S.

After an interval of sixteen years—with the exception of a single day by each of us—on the 2nd June last, my friend, Mr. W. H. Tugwell, of Greenwich, and I started on a collecting expedition to Abbott's Wood, Sussex. We made Hailsham head quarters, and worked together until Saturday, the 11th, when Mr. Tugwell returned to London, but I, not being able, so late in the day as he left, to get through to Huddersfield, stayed over until Monday. The weather, all through our visit, was everything we could desire, and *Lepidoptera*, both day-flying and night-flying species, were in profusion. The most striking feature was the extraordinary number of moths which visited the sugared trees in the evening, and this, notwithstanding that the atmospheric conditions on most nights were directly opposed to what are usually supposed to favour "good nights." With a bright, almost full moon, north or north-east wind, and scarcely any moisture in the

air, moths came in thousands, the sugar patches being literally covered with sometimes two hundred on a patch, fighting for places. Nor were the visitors confined to the *Noctuæ*, some of the *Geometræ* being as eager for the sweets as the most ardent "thick body." *Tephrosia extersaria* was indeed one of the most abundant visitors, occurring on the first "round" on almost every tree in numbers from three or four up to twenty or more. On our last "round" for the evening *Boarmia consortaria* was tolerably common, and *Eurymene dolobraria* was a not unfrequent visitor. Other visitors in the family included *Odontopera bidentata*, *Ephyra porata*, *E. trilinearia*, *E. punctaria*, *E. pendularia*, *C. russata*, &c. The *Bombyces* were represented by two *Lithosia aureola*; and *Chærocampa Elpenor* and *Halias prasinana* were not unfrequent visitors to sugared posts just outside the wood. The most abundant *Noctua*, as might be expected, was *Grammesia trilinea*, and every conceivable form in both ochreous and grey specimens occurred, whilst the dark olive var. *bilinea* might have been picked off in scores. *Aplecta herbida* was in great force, and could have been taken in hundreds in exquisite condition. Nearly all the *Noctuæ*, indeed, were in perfect condition, and we had evidently just hit the right time for them. *Aplecta nebulosa* was also very common, but not nearly so abundant as *herbida*, and a few only of *Aplecta tincta* were taken. Of "better" species we each took a few *Cymatophora fluctuosa*, and *C. or* was common; so also were *Xylophasia hepatica*, *Thyatira batis*, *Apamea unanimitis*, and many others; *Acronycta ligustri* was fairly so, and probably towards a score of *Diphthera Orion* and a few *Hadena genistæ* were taken. *Erastria fuscula* was abundant. Other *Noctuæ*, many of them occurring in large numbers, included *Thyatira derasa*, *Acronycta psi* or *tridens* (probably both), *A. leporina*, *A. aceris*, *A. megacephala*, *Xylophasia rurea*, including grand forms of the var. *combusta*, *Mamestra anceps*, *M. persicariæ*, *Apamea basilinea*, and *A. gemina*, fine forms of both; *Agrotis suffusa*, and several others of the genus; *Noctua plecta*, *brunnea*, *c-nigrum*, *festiva*, *rubi*, &c.; *Euplexia lucipara*, beautiful purple forms; good varieties of *Hadena dentina* and *H. thalassina*, *Heliothis marginata*, *Gonoptera libatrix*, &c., &c.

Day work was also most enjoyable and satisfactory. *Colias Edusa* was not uncommon, both in the Abbott's Wood district, and also at Eastbourne (where we had one day's collecting); and *Vanessa cardui* was abundant. *Melitæa Athalia* was tolerably common and widely distributed in the woods, but *M. Artemis* was rare. *Argynnis Euphrosyne* and *A. Selene* were in profusion, as usual. *Lycæna Adonis*

abounded on the cliffs between Beachy Head and Eastbourne, together with an occasional *L. Alsus*, and, of course, any number of *L. Alexis*. Altogether, about twenty-six species of butterflies occurred. Of moths, *Macroglossa fuciformis* was common in the "Long Meadow" in Abbott's Wood, and I netted eight on one visit at flowers of *Ajuga reptans*. *M. stellatarum* occurred in the wood, and also on the cliffs at Eastbourne. *Procris statices* was common in the "Long Meadow," and with it occurred a few *Zygæna trifolii*. In the woods *Chelonia plantaginis* gambolled about in plenty, and Mr. Tugwell netted one *C. villica*. In the "rides" in the woods, *Venilia maculata*, very variable in depth of colour, flew freely, as did also *Botys fuscalis* and *B. pandalis*, with a fair sprinkling of the two pretty species, *Melanippe hastata* and *Ennychia octomaculalis*. Only one *Agrotera nemoralis*, beaten out of hornbeam, was taken, but several *Botys lancealis* occurred. *Roxana arcuana* and *Adela Degeerella* flew about the hornbeams and other trees in swarms, but very few others, either *Tortrices* or *Tineæ*, were noticed. Other species taken by beating, searching, &c., included *Smerinthus ocellatus*, *Limacodes testudo*, *Nola cristulalis*, *Lithosia mesomella*, *Selenia lunaria*, *Tephrosia consonaria*, *Iodis lactearia*, and *Acidalia remutata* in swarms; *Asthenes candidata*, *Eupisteria heparata*, *Acidalia promutata*, at Eastbourne; *A. subsericeata*, at both Hailsham and Eastbourne; *Corycia temerata*, *Numeria pulveraria*, common; *Emmelesia affinitata*, *Eupithecia plumbeolata*, *Lobophora sexalisata*; *Melanippe galiata* at Eastbourne; *Tanagra chærophyllata*, *Heliodes arbuti*, *Habrostola urticæ*, *Plusia gamma*, in plenty, as everywhere else this season; *Euclidia mi*, abundant and very fine; *E. glyphica*, *Phytometra ænea*; *Herminia barbalis* and *H. grisealis*, both common, &c.

Larvæ were not much worked for, but both of us took *Tethea retusa*, which, however, was very scarce this year. *Pæcilocampa populi* occurred on willow, as did, of course, those of *Epunda viminalis*, *Phigalia pilosaria*, and *Orthosia lota*. *Timandra amatoria* was found on dock; *Diloba cæruleocephala* in abundance on hawthorn hedges; *Agriopsis aprilina*, and other *Noctuæ*, on oak, &c., &c.

The district seemed poorly represented in *Neuroptera* and *Trichoptera*, possibly, however, because being so much engaged with *Lepidoptera*, we did not look for more suitable places for the other Orders. Of dragon-flies, *Platetrum depressum*, *Libellula quadrimaculata*, *Brachytron pratense*, *Pyrrhosoma minium*, *Agrion pulchellum*, and *A. puella* were all common in the woods or lanes, and I think *Ischnura elegans* was not uncommon. Of *L. quadrimaculata*, Mr. Tugwell

netted a beautiful specimen of the variety *prænubila*. *Nemoura variegata* was common among sallows, as usual, and *Panorpa communis* and *germanica* were abundant. The genus *Chrysopa* was represented by *alba*, *ventralis*, and *perla*, all plentifully.

Of *Trichoptera*, *Micropterna lateralis* vied in numbers at sugar with many of the abundant *Noctuæ*, coming to the trees in hundreds, dozens could sometimes be seen on a single patch. *Phryganea grandis* was a common visitor, and *Limnophilus centralis* also occurred. At Eastbourne *Tinodes assimilis* was plentiful on rocks on the beach, through and down which fresh water was dripping.

It was too early for most of the *Orthoptera*, and only four species were noted. *Stenobothrus viridulus* and *S. rufipes* were both common in the "Long Meadows;" *Tettix bipunctatus* and *Blatta orientalis*.

Huddersfield: July 22nd, 1892.

THE ENTOMOLOGY OF A BAYSWATER HOUSE.

BY FRANCIS P. PASCOE, F.L.S.,

Ex-President of the Entomological Society.

For some years I have collected insects of all Orders that have found their way into my house. This has been at irregular intervals, and confined to a few weeks, at most, during the season.

No. 1, Burlington Road is at the S.W. corner of St. Stephen's Square. The house being due north and east, and having no garden, is not favourably situated, yet the number of species taken is over ninety, mostly captured on the east side, and owing, probably, to the vicinity of the square which it faces.

In this list the *Aphides*—depending on plants introduced—as well as some small undetermined *Diptera*, are excluded; many species are regular visitants. The Orders are classified, beginning with the lowest forms, but the species, as they were taken. For the names of most of the *Diptera* I am indebted to Mr. Meade, of Bradford, to whom I can scarcely sufficiently express my thanks.

HEMIPTERA.

Anthocoris nemorum.

Orthotylus prasinus.

Phytocoris tiliaë.

Ptyelus spumarius.

Cybos smaragdulus.

Lyctocoris domestica.

Aphis, sp.

ORTHOPTERA.

Periplaneta orientalis.

Forficula auricularia.

Gryllus domesticus.

NEUROPTERA.

Chrysopa vulgaris.

„ *vittata.*

Heimerobius subnebulosus.

Atropos divinatoria.

DIPTERA.

Rhyphus fenestralis.
Empis livida.
Psychoda phalaenoides.
Chironomus plumosus.
Sciara praeox.
Tipula oleracea.
Sapromyza trimaculata.
Musca domestica.
Calliphora vomitoria.
Dilophus febrilis.
Lucilia Cæsar.
Drosophila fenestrarum.
Scatopse notata.
Aricia lardaria.
Dolichopus, sp.
Homalomyia canicularia.
Scatophaga stercorea.
Sargus cuprarius.
Bibio hortulanus.
Stomoxys calcitrans.
Piophilæ casei.
Anthomyia pluvialis.
Phytomyza affinis.
Chrysomyia polita.
Cecidomyia, sp.
Syrphus balteatus.
 „ *corollæ.*
Scæva menthrasti.
Heteromyza nervosa.
Ortalis pulchella.
Anthomyia radicum.
Tachydromia annulimana.
Morellia hortorum.
Spilogaster uliginosus.
Platychirus albimanus.
Syrpitta pipiens.
Ortalis vibrans.
Scyphella flava.
Chlorops cereris.
Phorbia cilicrura.
Nemopoda cylindrica.
Cyrtoneura stabulans.
Pulex irritans.

LEPIDOPTERA.

Tinea pellionella.
 ? *Argyrolepis, sp.*
Melanippe rivata.
Orgyia antiqua.
Hemerophila abruptaria.
Plusia gamma.
Tinea tapetzella.
Dasycera sulphurella.
Mania typica.
Tinea biselliella.
Pyrallis farinalis.
Eupithecia, sp.
Caradrina cubicularis.
Melanippe galiata.
Hyponomeuta padella.
Abrazas grossulariata.
Spilosoma lubricipeda.

COLEOPTERA.

Sphodrus terricola.
Hypera nigrirostris.
Latridius nodifer.
Niptus hololeucus.
Coccinella 5-punctata.
Dermestes lardarius.
Anobium domesticum.
Blaps mortisaga.
Latridius, sp.
Atomaria, sp.
Anobium paniceum.
Calandra granaria.
Cryptophagus fumatus.
Calathus mollis.
Quedius frontalis.
Aphodius, sp.
Orchestes quercus.
Tachinus, sp.
Creophilus maxillosus.
Dermestes murinus.
Omosita colon.
Aphodius, sp.
Nacerdes melanura.
Necrophorus vespillo.
Lyctus brunneus.

*Homalium florale.**Ocypus cupreus.**Telephorus melanurus.**Feronia melanaria.*

HYMENOPTERA.

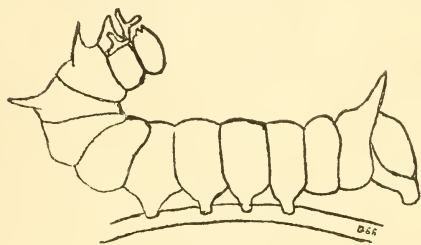
*Vespa vulgaris.**Apis mellifica.**Hemiteles arator.**Aphidius*, sp.*Formica rufa.**Hemiteles bicolorinus.**Cynips Kollari.*

1, Burlington Road, Westbourne Park :
June, 1892.

NOTES ON THE LARVA OF *DANIMA BANKSIE**, LEWIN.

BY THE REV. C. D. ASH.

The full grown larva of this Australian moth possesses a curious appendage, in the shape of a bifurcate fleshy protuberance, of a dull red colour, somewhat similar in appearance to that possessed by larvæ



of the genus *Papilio*. This is situated between the first and second segments on the under-side, and is only visible when the larva is disturbed, when it is protruded in the same manner as that of *Papilio*; each of the branches

of this organ is in the shape of a Y, and the two branches appear to be united at the base. The larva, as far as my experience goes, only displays it under great provocation. I had reared several before I discovered its existence; but, on one occasion, having accidentally given the larva a sharpish blow while changing its food, the process was darted out and remained extended for some time, the larva remaining motionless with the anterior segments thrown back, after the manner of *Petasia nubeculosa*, a position which it habitually assumes when at rest. The protuberance is very conspicuous, owing to its contrast to the shining black surface of the under-side of the first three segments.

I did not detect any odour when the larva extruded the curious appendage, neither, as far as I could tell, was any fluid discharged from it. I had reared several of the larvæ without suspecting the existence of the appendage; the one which displayed it was just full-fed, and I did not succeed in getting another. The insect was not very common.

Saxby Rectory, Barton-on-Humber :
June 22nd, 1892.

ANNOTATED LIST OF BRITISH *TACHINIIDÆ*.

BY R. H. MEADE.

(Continued from page 212).

The six following genera contain small shining black species, with closed and pedunculated first posterior wing cells, naked eyes, and facialia, and short antennæ, which are so much alike that it is difficult to find any good diagnostic characters, and to place them in satisfactory groups; I shall, therefore, arrange them in another short analytical table before describing them.*

- | | | |
|-----------|---|------------------|
| 1 (10) | Alulæ small, or of moderate size. | |
| 2 (8) | Outer cross vein placed nearly in the centre between the inner cross vein and the bend of the fourth vein. | |
| 3 (4) (5) | Cheeks (not <i>facialia</i>) ciliated with a row of fine setæ, continuous with the fronto-orbital bristles | CLISTA, Mgn. |
| 4 (3) (5) | Cheeks armed on their lower part with a row of strong bristles... | RHINOPHORA, Mgn. |
| 5 (3) (4) | Cheeks bare, or having only a few scattered fine hairs. | |
| 6 (7) | Chin large and setose | FORTISIA, Rnd. |
| 7 (6) | Chin small and smooth. | |
| 8 (2) (9) | Outer cross vein much nearer to the inner one than to the bend of the fourth vein | PLESINA, Mgn. |
| 9 (2) (8) | Outer cross vein nearer to the bend of the fourth than to the inner cross vein | PHYTO, Dsv. |
| 10 (1) | Alulæ very large, and anal segments of female armed with claspers or forceps | LEUCOSTOMA, Mgn. |

38.—CLISTA, Mgn.

LEUCOSTOMA, p. Zett.

Gen. ch.—Eyes long and nude, extending over most of the side of the head, approximate in the male; chin small but setose; epistome prominent; vibrissæ large; fronto-orbital bristles in a double row behind in both sexes, and the inner row continuous with a line of fine setæ, which extends to the bottom of the narrow cheek; facialia bare; antennæ with the second joint nearly as long as the third; arista sub-pubescent; abdomen without discal setæ; stalk of the first posterior wing-cell about two-thirds of the length of the outer cross vein, which is placed nearly midway between the bend of the fourth vein and the inner cross one, or sometimes rather nearer to the former.

- | | | |
|-------|---------------------------------|----------------------------|
| 1 (2) | Abdomen with white fasciæ | 1. <i>mærens</i> , Mgn. |
| 2 (1) | Abdomen immaculate | 2. <i>ænescens</i> , Zett. |

C. MÆRENS, Mgn.

Black and glabrous; frontalia shining black behind, and with a central black

* This table differs in some points from that placed at the beginning of my paper.

stripe and white sides in front; palpi black; thorax with a grey patch on the shoulders, and with three post-sutural dorso-central setæ; abdomen with an interrupted white band on the front margins of the segments; alulæ dirty white; halteres yellow; wings with a costal spine, and nigrescent along the front border. Not common. In the Rev. E. N. Bloomfield's and Mr. Dale's collections.

C. *ÆNESCENS*, Zett.

This species differs from the former (*mærens*) by being a little larger, more æneous in colour, with rather wider frontalia; by the buccal setæ being arranged in a less regular row; by the cheeks and chin being larger; by the abdomen being wider (less cylindrical), and quite of a glistening æneous black colour, and by the cell-stalk of the wings being a little shorter. Not very rare.

38A.—*FORTISIA*, Rnd.

CLISTA, p. Mgn., Mcq., Schr.

Gen. ch.—In general characters similar to *Clista*. Eyes bare and short; chin large and very setose; cheeks bare; fronto-orbital setæ only extending to the apex of second antennal joint; abdominal segments with discal setæ; first posterior wing-cell with a short stalk, only about a fourth of the length of the outer cross vein.

F. *FEDA*, Wdm.

Frontalia very narrow in the male, and moderately wide in the female, with a dull black stripe, and shining black sides; face dark grey with black reflections; arista very short, with a thickened base; thorax and abdomen black, glabrous, and immaculate; alulæ mostly brown; wings nigrescent, with outer cross vein oblique, and placed rather nearer to the bend of the fourth than to the little cross vein; palpi black. Rare; in the Rev. E. N. Bloomfield's and Mr. Dale's collections.

39.—*RHINOPHORA*, Mgn.

Gen. ch.—Eyes bare, frontalia moderately wide in both sexes; fronto-orbital bristles extending to about the level of the roots of the antennæ, which are short, with the second and third joints of nearly equal lengths; arista pubescent; cheeks armed on their lower halves with a short row of strong bristles, which are placed near, but not on, the facialia; chin setose; abdomen long, narrow, and subcylindrical, with the segments of nearly equal lengths; wings with a rather long cell-stalk, it being nearly of the same length as the outer cross vein, which is placed almost in the middle between the bend of the fourth and the inner cross vein.

R. *ATRAMENTARIA*, Mgn.

Frontalia with a black stripe, rather wider than the sides, which are white with black reflections; cheeks glistening white with dark reflections, and ciliated on their upper part with a row of fine hairs, which are continuous with the strong bristles on their lower part; antennæ black; arista strongly pubescent; palpi black; thorax

shining black, with three broad black stripes separated in front by white spots; post-sutural outer dorso-central bristles three in number; abdomen black and glabrous, with sub-interrupted, rather narrow, grey fasciæ on the front margins of the segments, which have both discal and marginal setæ; legs black and setose; wings brown, darker along the front margins. Not common; I captured it in Kent in June, 1888.

41.*—PLESINA, Mgn. et Schnr.

STEVENIA, Dsv. et Rnd.

LEUCOSTOMA, Zett. et Mcq., *p.*

Gen. ch.—Species small, with black marked wings, in which the outer cross vein is placed much nearer to the inner one than to the bend of the fourth vein; eyes nude, approximate in the male, and moderately wide apart in the female; cheeks narrow, and, like the facialia, without ciliæ; antennæ small and short; arista slightly pubescent; wings with the first posterior cell with a stalk nearly as long as the outer cross vein.

P. MACULATA, Flin.

Frontalia with the sides black, and with metallic lustre, central stripe dull black or piceous; face glistening white, with dark reflections; antennæ very small and rufous; arista very short; palpi very small and pale; thorax shining black, with slightly grey shoulders, and with three post-sutural outer dorso-central bristles; abdomen black, glabrous, and immaculate, without discal setæ; alulæ white; halteres with a yellow stalk and dark head; wings with a large black patch on the upper and distal half, and with the cross veins and further half of fourth vein clouded with black; legs black or piceous. Rare; in Mr. Billups' collection.

43.—PHYTO, Dsv., Rnd., *p.* Schnr., *p.*

RHINOPHORA, Mgn., *p.*

PTYLOCERA, Mcq., *p.*

SAVIA, Rnd., *p.*

Gen. ch.—Species rather larger than in the last genus, and more griseescent; they also differ by having much shorter wing-stalks (their length not being more, and sometimes less, than a fourth of that of the outer cross vein); and by the position of the outer cross vein, which is placed rather nearer to the bend of the fourth than to the little cross vein; the cheeks have a few scattered fine hairs, but no setæ; the eyes are rather widely separated in both sexes; the antennæ have the third joint a little longer than the second; and the abdomen is either with or without discal setæ.

1 (2) Abdomen marked with grey fasciæ 1. *melanocephala*, Mgn.

2 (1) Abdomen without fasciæ 2. *nigra*, Dsv.

* I keep to the numbers that I originally gave to the genera, though I have arranged them in a new order.

P. MELANOCEPHALA, Mgn.

Frontal stripe black, rather wider than the sides of frontalia, which are grey, with dark reflections; face white; antennæ grey; arista long and pubescent, with basal third thickened; palpi yellow; thorax grey, with three wide dorsal black stripes, and three post-sutural outer dorso-central bristles; scutellum grey; abdomen black, with the front part of the segments bordered by wide interrupted grey bands, last segment quite grey; middle segments with both marginal and discal setæ, the first and second somewhat translucent and rufous on their under-surfaces in the male; alulæ and halteres yellow; wings grey, with yellow roots, having the fourth vein bent at a sharp angle, and sometimes furnished with a short appendix; legs piceous or black. Rare; I have two specimens, which I found in the late F. Walker's collection.

P. NIGRA, Dsv.

P. leucocephala, var. Rnd.

This species differs from the former by having the abdomen black, glabrous, and without grey bands; by the absence of discal setæ on the segments; by the wings being without stalks, the cell being closed at the costa; by the apical cross vein being more oblique, owing to the fourth vein being bent at a more obtuse angle; by the absence of cubital appendix; and by the outer cross vein, which is oblique and sinuous, being placed rather nearer to the bend of the fourth vein. Rare; I captured a single specimen in June, 1878, at Sandy, in Bedfordshire.

42.—LEUCOSTOMA, Mgn., p. Zett., p. et Schnr.

PSALIDA, Rnd.

This, the last of the group of small genera with closed first posterior wing-cells and short antennæ, differs from all the rest by having unusually large alulæ, and the anal segments of the female armed with forceps or claspers. I have followed Schiner in confining it to the species having these characters, referring several others which were included in this genus by Meigen and Zetterstedt to that of *Clista* or *Phyto*.

Gen. ch.—Frontalia narrow in the male, but wide in the female; eyes nude; antennæ short, with the third joint a little longer than the second; cheeks narrow and bare; facialia nude; palpi slightly clavate; abdomen short, thick, and fusiform, or spindle-shaped, without discal setæ, and armed with forceps at the end in the female; wings with a rather long cell-stalk (about two-thirds of the length of the outer cross vein), and with the hinder transverse vein nearly centrally placed.

L. SIMPLEX, Flh.

Frontal stripe black, and rather narrower than the sides of the frontalia, which are black behind and grey in front; face glistening white, with dark reflections;

antennæ black, with the third joint a little thickened; arista short, slightly pubescent, and thickened for nearly half its length; palpi piceous; thorax and abdomen black, glabrous, and immaculate; the former having a little grey pubescence on the shoulders and sides; alulæ pure white, the lower scale being very long; halteres black; wings clear, outer cross vein placed a little nearer to the bend of the fourth than to the little cross vein; legs black. Rare.

(To be continued). 259

NOTES ON ETHIOPIAN *RHYNCHOTA*.

BY W. L. DISTANT, F.E.S.

(continued from page 189).

Fam. PENTATOMIDÆ.

Sub-Fam. PENTATOMINÆ.

UHLUNGA, *n. g.*

Head moderately long and broad, obliquely depressed, the lateral margins concavely sinuate, central lobe reaching the apex, which is rounded; eyes somewhat prominent; antennæ 4-jointed, 2nd joint very long, basal joint short, moderately incrassated, not quite reaching the apex of the head. Pronotum broader than long, strongly depressed anteriorly, the lateral margins almost straight or very slightly and obscurely sinuate; the lateral angles obtusely prominent in the male, subacutely spinous in the female; the posterior margin concavely sinuate. Scutellum with the basal half moderately gibbous, subtriangular, narrowed towards apex, which is obtusely angulated. Corium not reaching outer margin of abdomen, exposing only connexivum in the male, but also part of the abdomen in the female. Membrane considerably passing the apex of the abdomen. Rostrum extending beyond the posterior coxæ. Abdomen in the male with a broad and elevated central longitudinal callosity, extending from base to anal appendage; in the female this is replaced by a broad, central, longitudinal sulcation.

This genus is remarkable by its strong sexual differences, the extended membrane, the dilated abdomen, &c., and is difficult to closely ally with another described genus. The sulcated abdomen in the female sex, with other characters, have induced me to place it in that portion of the *Pentatominae* distinguished by Dallas as his Family *Halydidæ*, and used by Stål as a section only of the whole Sub-Family.

UHLUNGA TYPICA, *n. sp.*

Body, above, ochreous, thickly covered with dark coarse punctures; scutellum with a distinct central levigate, longitudinal, pale fascia on its apical half; membrane bronzy-brown; antennæ with the 1st and 2nd joints ochraceous, 3rd and 4th joints (excluding their bases) infuscated, 2nd joint in the male with its apex infuscated, 3rd and 4th joints subequal in length, and together about equal to that of 2nd. Eyes fuscous. Rostrum ochraceous, with its apex pitchy.

♂. Pronotum with the lateral angles obtusely and somewhat nodulosely rounded, and with their apices narrowly pale ochraceous. Connexivum ochraceous, spotted with castaneous. Head beneath, sternum and legs pale ochraceous; abdomen castaneous, the central callosity and the extreme lateral margins pale ochraceous.

♀. Pronotum with a central transverse fasciate series of dark punctures, the lateral angles subacutely prominent, their apices and anterior lateral margins black, their posterior lateral areas castaneous. Connexivum spotted with castaneous, exposed margins of the abdomen above with the segments margined with black. Body beneath and legs ochraceous; the tibiæ orange-yellow; the lateral areas of the abdomen and the pronotal angles beneath infuscated.

Long., including apex of membrane, ♂, 6, ♀, 7 mm. Lat., ♂, 4, ♀, 5 mm.

Hab.: Natal, Durban (*E. Hunt*, South African Museum and Collection Distant).

ORTHOSCHIZOPS PLAGOSA, *n. sp.*

Body, above, ochraceous, striped and punctured with brownish. Head, with the margins of the central lobes, black; eyes black, with their inner margins ochraceous; antennæ ochraceous. Pronotum with four broad longitudinal series, and a central straight linear series of brown punctures; lateral margins and pronotal angles blackish. Scutellum with a central linear and six more irregular series of brown punctures, two of these series being thickened before apex in a macular manner. Corium thickly covered with brown punctures, the veins and lateral margins ochraceous. Membrane pale fuscous, the venation pitchy. Connexivum spotted with black on each side of the segmental incisures. Body beneath and legs ochraceous; head beneath with a patch of black punctures on each lateral lobe; sternum with two waved pale fasciæ margined with dark punctures on each side; the whole sternal area punctured with brown. Abdomen very thickly and finely punctured with brown, a series of pale stigmal yellow spots and the connexivum marked as above.

The lateral lobes of the head are longer than the central, and almost obliquely meet in front of it; the lateral margins of the pronotum are strongly spinous, and the angles are prominently produced and spinous; the apices of the corium are moderately rounded and slightly sinuate.

Long., 11 mm.

Hab.: South Africa; Hex River Valley.

Allied to *O. hians*, Stål.

PODODUS STRIATUS, *n. sp.*

Ochraceous, thickly, coarsely and irregularly punctured and mottled with black. Head more thickly punctured in front than behind, and with two broad, dark basal fasciæ, the anterior margin hirsute. Antennæ pale brownish, basal half of the 2nd joint and base of the 3rd ochraceous; 2nd and 3rd joints hirsute. Pronotum with a deep, central, transverse striation, coarsely and thickly punctate, the lateral areas paler in hue, the lateral margins hirsute. Scutellum with a series of small ochraceous spots on basal margin, and an irregular elongate spot of the same colour

on the lateral margin near base. Corium with the base of lateral margins paler in hue and hirsute. Membrane obscure fuscous. Connexivum alternately black and ochraceous. Body beneath ochraceous, disc of abdomen testaceous; a broad, black, sublateral fascia extends from base of head to apex of abdomen, and inwardly contains a series of ochraceous spots, three central ochraceous spots to abdomen. Legs punctured with brown, apices of the femora and tibiæ pitchy. Rostrum, excluding base, pitchy, and two pitchy spots near base of anterior coxæ. Long., 6 mm.

Hab. : South Africa; Cape Town.

A species to be recognised by the transverse striation to the pronotum, and the distinct markings on the under-surface of the body.

Sub-Family PHYLLOCEPHALINÆ.

BASICRYPTUS ELONGATUS, *n. sp.*

Body above pale castaneous; head, anterior half of pronotum, and basal two-thirds of scutellum more or less ochraceous. Head with the anterior margins darker, and very thickly and coarsely punctate, remaining area more obscurely punctate. Antennæ ochraceous, basal joint, base of 2nd, and apices of 2nd and 3rd, pitchy. Pronotum with the basal half and part of anterior half rugosely striate, the anterior lateral margins strongly dentate and pitchy. Scutellum rugulose and coarsely punctate. Corium thickly and finely punctate, the lateral margins coarsely rugose, or subnodulose and dull ochraceous. Membrane greyish. Body beneath and legs pale castaneous, head beneath and the lateral areas of sternum ochraceous. Rostrum castaneous. Long., 21 mm.

Hab. : Transvaal, Rustenberg.

This fine species is allied to *B. gibbosus*, Dall., from which it differs by its much more elongate body, by the 3rd joint of the antennæ being only slightly shorter than the 2nd, the anterior lateral margins of the pronotum are much more strongly dentate, the apex of the scutellum is narrower, &c.

I did not meet with it myself on the highlands of the Transvaal, and it is probably confined to the warmer valleys.

BASICRYPTUS ANTENNATUS, *n. sp.*

Closely allied to the preceding species, but differing principally by the antennæ, in which the apex of the 4th joint is distinctly enlarged and subspatulate, the apical joint being also considerably more thickened than in *B. elongatus*. Other points of difference are found in the lateral margins of the pronotum, which are more regularly dentate to the lateral angles, the scutellum is narrower and less sinuated before the apical area, and the sternum is wholly ochraceous. Long., 19 mm.

Hab. : East Africa, Nyassa (*Cotterell*).

Russell Hill Road, Purley :

August, 1892.

DESCRIPTIONS OF TWO NEW *PSELAPHIDÆ*
 FOUND BY MR. J. J. WALKER IN AUSTRALIA AND CHINA.

BY D. SHARP, M.A., F.R.S., &c.

Mr. J. J. Walker (whose entomological letters from H. M. S. "Penguin" have so much interested the readers of this Magazine) has sent me two specimens of *Coleoptera* of the Family *Pselaphidæ*; each of them proves to be the representative of a new genus.

EULASINUS, *n. g.* (*Tyrini*, Raffray).

The insect for which this new generic name is proposed comes very close to the genera *Pselaphodes*, *Lasinus* and *Labominus*, especially the latter, from which, however, it can no doubt be very readily distinguished by the shorter 1st dorsal segment. *Labominus* was characterized by me from a single example, and that specimen is still all that is known of the genus; I described the palpi as angulate externally, but I did not note whether there was any armature on the prominences as there is in *Eulasinus*. The structure of the palpi sufficiently distinguishes *Eulasinus* from *Pselaphodes* and *Lasinus*, to both of which it is extremely similar in appearance. The 1st joint of the palpus I am unable to see; the 2nd joint is rather strongly curved, the length being three or four times the greatest width, which is at the apex, and at the outer side of this broadest part there is a slight prominence armed with numerous excessively short setæ; 3rd joint rather longer than broad, a little swollen and angular externally, the prominent part armed with short setæ; 4th joint slender, elongate oval, at one-third of the length from the base bearing externally a feeble prominence, armed, like the prominent places on the preceding joints, with short setæ; apex terminating in a transparent seta, quite half as long as the diameter of the broadest part of the joint, and bearing at the extremity an excessively minute terminal articulation.

EULASINUS WALKERI, *n. sp.*

Elongatus, pubescens, rufus, capite thorace antennisque rufo-obscuris, antennis pedibusque elongatis; capite thoraceque dense rugoso-sculpturatis, singulo minutissime trifoveolato, thorace disco prominulo, tenuiter canaliculato.

Long., 3 mm.

♂. Extremely similar to *Lasinus spinosus*, but slightly smaller, and with the front of the head shorter. Basal joint of antennæ about as long as the three following joints together, 2nd to 4th nearly similar to one another, each about as long as broad, 5th and 6th each a little longer, 7th slightly shorter than 6th, a little truncate on its inner face at the apex, 8th smaller, quadrate, 9th greatly dilated,

triangular, its upper surface concave and polished, its inner apical angle forming a free process, the apical margin of the hollow a little elevated and emarginate, 10th joint also dilated and concave on its upper surface, much smaller than the 9th, transverse, terminal joint normal, oval, short. Head with the produced front almost flat, scarcely at all canaliculate. Thorax rather small, longer than broad. Elytra rather short, narrow at the base, much broader behind, very sparingly punctate and pubescent, with a well marked discoidal stria extending for more than half the length. First dorsal segment more than twice as long as the 2nd. Legs very long, front trochanter elongate, spinose at the apex, femur with a long sharp spine; middle trochanters bearing very short teeth, femur not armed; posterior trochanters very long, but not armed. Breast armed with two elongate erect processes.

I have described this species from a single male example sent me by Mr. Walker; the locality where it was found he mentions as being the summit of Ta-maou Island of the Chusan Archipelago, where he found it buried in the moss under a stone.

EUDRANES, *n. g.* (*Tyrini*, Raffray).

Trochanteres intermedii elongati, anteriores posterioresque breves. Palpi maxillares parvi. Antennæ ad insertionem approximatæ. Unguiculi duo, æquales. Corpus densissime punctatum, setulis minutis vestitum.

This genus is a very distinct and isolated one, and will be recognised by a glance at the margins of the hind-body, which appear to be duplicate, owing to the incrassation of the upper edge of the ventral plates. In M. Raffray's tables it would find its place near *Marellus* and *Centrophthalmus* of the group *Tyrini*.

Maxillary palpi short, 1st joint not observed, 2nd thick at the extremity, 3rd and 4th joints quite small, the latter acuminate at one side of the tip. Mouth parts projecting forwards beyond the insertion of the antennæ. Head short, with a short produced piece in front, on the anterior aspect of which the antennæ are inserted. Antennæ 11-jointed, thick, moderately long, basal joint only twice as long as the next; club elongate, three-jointed. Middle coxæ quite contiguous. First ventral segment very short, not forming any process between the hind coxæ, 2nd and 3rd equal, moderately long, 4th and 5th short, emarginate for the accommodation of the terminal segment. First, 2nd and 3rd dorsal segments subequal in length, 4th shorter; segments 1-3 carinate on each side of the middle; the lateral margin is not elevated, but is extremely broad, and the edges of the ventral segments are brought up to its level, thus making it appear duplicate. The tarsi are moderately long and slender, and each bears two well marked claws of nearly equal size.

EUDRANES CARINATUS, *n. sp.*

Rufus, opacus, vix perspicue punctatus, setulis minutis depressis, flavescens vestitus, abdomine utrinque segmentis dorsalibus 2^o ad 4^m medio plicato-carinatis.

Long., 3 mm.

Antennæ with the 2nd joint not so long as broad, 3rd to 8th each quite short, similar, 9th to 11th forming a very long club, scarcely thicker than the rest of the antennæ, but almost as long as joints 1—8. Head with the produced front slightly canaliculate; eyes large, convex, coarsely faceted; the margin of the head behind them densely setose. Thorax even, unimpressed, longer than broad. Elytra with a strongly impressed sutural stria, and a discoidal impression, of which the inner edge is raised or plicate. Hind-body quite dull.

This species is described from a single example, of uncertain sex, given to me by Mr. J. J. Walker, of H.M.S. "Penguin," who found it in an ants' nest on the Adelaide River, N.W. Australia, in 1890.

Hawthorndene, Hills Road, Cambridge:

August, 1892.

DESCRIPTION OF THE LARVA OF *GNORIMUS VARIABILIS*, L.

BY THE REV. CANON FOWLER, M.A., F.L.S., &c.

Mr. J. C. Bowring, of Forest Farm, Windsor Forest, kindly sent me a pair of this very scarce Lamellicorn, of which he had taken several from an oak tree which had been blown down in the forest, and he also sent me two larvæ, one of which was, unfortunately, lost in the post, but the better of the two, which was nearly full-grown, arrived safely, in spite of the box being broken and the end open; as I was not aware that this larva had previously been described, I drew up a description, but I have since found that it has been noticed by several authors, and has been described by Perris in his "Histoire des Insectes du Pin maritime," as he had found it twice in the woody mould of stumps of that tree; it has also been found in the chestnut.

The following is a description of the specimen sent to me:—

Length, 22 mm.; colour dirty yellowish-white, sparingly furnished above and below with reddish hairs; head reddish-brown, somewhat rugose, especially in front; epistoma and labrum coarsely punctured; mandibles blackish, large, stout, and blunt, deeply channelled on their upper-side; antennæ 4-jointed, inserted in a large prominence, 3rd joint produced on outer edge at apex, apical joint contracted at base and bluntly pointed at apex; maxillary and labial palpi moniliform, with the last joint dark brown, sub-conical; spiracles very conspicuous, reddish-brown; pronotum smooth, with a large light reddish-brown horizontal patch on each side; last abdominal segment large, with a deep furrow across the upper surface about middle, and with a depression at each side before apex; legs moderately long, with

stout reddish bristles, and terminated by a single stout dark brown or blackish claw ; the larva appears closely to resemble that of *Trichius*, except that the latter has no furrow on the mandible, and the head, epistoma, and labrum are smooth or nearly smooth ; the last segment is divided by a furrow on the dorsal surface only, which distinguishes the larvæ of *Gnorimus* and *Trichius* from those of the *Cetoniina*, which have no division.

Lincoln: July 11th, 1892.

Eros (Pyropterus) affinis, Payk., &c., in the north of Scotland.—During a recent trip to the north of Scotland I took the opportunity of breaking the journey at Aviemore, where, after a lapse of fifteen years, I spent a week (July 20th—27th) revisiting my old collecting ground in this neighbourhood. In some of the earlier volumes of this Magazine (xi, pp. 63, 64 ; xiii, pp. 111, 112 ; xiv, pp. 92, 93) I have given an account of the most noteworthy *Coleoptera* occurring at Aviemore, and during the present visit I was only able to add one species to my list. This species, *Eros (Pyropterus) affinis*, Payk., is, however, an important addition, the only recorded British localities being Killarney and Sherwood ; fourteen specimens of it were obtained from a rotten pine stump. A few of the rarer species already noted by me again occurred, as —*Leptura sanguinolenta*, one ♂ under pine bark (I captured a ♀ in the same locality in June, 1876!) ; *Abdera triguttata*, not rare, as before ; *Zilora ferruginea* and *Xylita lævigata*, both very rare now ; *Hallomenus humeralis*, *Homalium (Acerulia) inflatum*, *Quedius xanthopus*, *Scydmaenus exilis*, *Lathridius rugosus*, very rarely, under pine bark ; *Trichius fasciatus*, Speyside. At Loch Maree I obtained *Zeugophora Turneri* in plenty on aspens at the side of the Loch, and *Brachonyx indigena* (1) on one of the Islands.—G. C. CHAMPION, Horsell, Woking: August 1st, 1892.

Anisotomidæ at Woking.—On the evening of July 30th, between 6.15 and 7.15 p.m., by repeatedly sweeping in a very restricted grassy spot amongst fir trees in this neighbourhood, I obtained no less than forty-four specimens of *Anisotomidæ*. These specimens were apportioned thus:—*Triathron Märkeli* (3) ; *Anisotoma nigrita* (1), *A. calcarata* (1), and *A. Triepkei* (39!). The latter varying exceedingly in size and in the development of the males, a few of them being very large. *A. ovalis* also occurred to me a little earlier the same evening. It is now seventeen years since I had seen *Triarthron* alive.—ID.

Abundance of larvæ of Vanessa cardui in South Devon.—In the neighbourhood of Salcombe, South Devon, during last July there were parts of the coast where it was difficult to find a plant of *Carduus arvensis* unoccupied by one or more larvæ of the above ; they also abounded on the common burdock (*Arctium lappa*), from one plant of which I took fifteen larvæ. I also took a few from *Carduus lanceolatus* and *C. tenuiflorus*, but was unable to discover any upon *Cnicus palustris* or upon mallow. The full-grown larvæ varied very beautifully in markings ; but not, so far as I could detect, in any way in accordance with their food-plant. Apparently this species does not, like *V. Atalanta*, pupate among its food-plant, as, although larvæ of all sizes were so abundant, I could not find any pupæ among the thistles I was searching.

Some of the pupæ I have obtained show a handsome dead-gold glitter on the wing cases, besides the dorsal metallic spots; doubtless they would furnish interesting material for some of the "protective resemblance" experiments with which Mr. Poulton has made us familiar in the case of the other *Vanessidæ*. The range of variation between the proportions of ash-grey and brown streaks on the pupæ is also very striking. I should mention that the larvæ of *V. cardui* were also to be found commonly on nettle, on which plant the ova, larvæ and pupæ of *V. Atalanta* abounded. On July 12th I met with the first fresh specimen of the latter insect, netting it to make sure; so that on that date the ova, larvæ and pupæ, and fresh and hibernated imagines, were existing synchronously—a curious condition of things.—R. M. PRIDEAUX, 9, Vyvyan Terrace, Clifton, Bristol: August 7th, 1892.

Occurrence of Syrichthus alveus, Hüb., in England.—Several years ago, when looking through the collection of the Rev. T. H. Marsh, of Cawston, Norfolk, I noticed that his series of *Syrichthus alveolus*, Hüb., consisted of specimens larger than any known to me, and slightly different in markings. Of these he very kindly gave me two, and these I compared, as opportunity offered, with types of the other European species of this very puzzling group. My difficulty was that they did not agree precisely with any, being apparently intermediate between *S. alveus* and *S. serratulæ*. Finally, however, it became evident that my specimens were truly *S. alveus*, and perhaps the difficulty experienced in deciding this point will appear less remarkable in view of the fact that Continental authors are divided in opinion as to whether *S. serratulæ* is, or is not, a variety of *S. alveus*.

Mr. Marsh took all his specimens in a damp open valley bordering a wood, in his own district, at the end of May or early in June, probably eighteen or twenty years ago. He recollects distinctly that they were on the wing when he was taking *Sesia bombyliformis*, also that he never saw the species except in that one year, yet believing the specimens to be *S. alveolus*, and therefore no rarities, he made no memorandum of the circumstance, and thus has lost the date.

It is worthy of remark here that *S. alveolus* is singularly local in Norfolk and apparently absent from large portions of the county. Mr. Marsh tells me that he never saw it in the district nor any that he supposed to be it except those under notice. The only explanation of their occurrence which he suggests is that they may have been the result of a migration, such as he observed in *Vanessa Antiopa* in a subsequent year. It is difficult to suggest any other explanation, since it can hardly be supposed that the species has existed as a settled inhabitant almost up to the present time in a county like Norfolk, the favourite hunting ground of so many of the earlier Entomologists of this country; while, on the other hand, there is not a shadow of doubt about the actual capture of the specimens in question. However they may have arrived they failed to establish themselves, for, as already stated, none were seen in subsequent years, and a strict search in the present season has served only to demonstrate the fact that not a specimen remained. *S. alveus* is very similar to *S. alveolus*, about one-eighth of an inch more in expanse of wings, and with the wings proportionately broader; of the same blackish-brown colour, but less suffused with grey hairs; with the cilia similarly chequered with black and white, but with fewer white spots on the fore-wings, and those grouped together in the outer half of the wings; while the hind-wings have no white spots, but two

rows of faintly pale dashes or indications of spots. Beneath, the spots of the fore-wings are as on the upper-side, while the hind-wings (of an ochreous-grey) have three broken rows of white spots.

Kirby says, "this species (or some of its numerous varieties) appears to occur in all parts of Europe except the north-west, as well as in Northern and Western Asia and North Africa, frequenting glades in woods and sunny slopes. It is commoner in the mountains than in the plains."—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E. : *August*, 1892.

Variety of Polyommatus Agestis, var. Artaxerxes, with four white spots above.—A recent statement of my own respecting the capture, in Durham, by my lamented friend Mr. Sang, of a specimen of this insect having a white spot on the upper-side of each hind-wing as well as on the fore, has brought me a communication of considerable interest. Upon seeing it, Mr. J. Ross, of Anstruther, wrote to tell me that he had, last year, found similar specimens in the County of Fife, and most kindly offered to send me some. The specimens, which have arrived, and which he most liberally allows me to keep, have, as stated, a white spot on each of the fore-wings on the upper-side; in two cases the white spot on the hind-wings being half as large as that of the fore-wings, while in the others it is rather a distinct dot. On the under-side these resemble ordinary *Artaxerxes*, or perhaps two are a little browner than usual, and one has (which is not unusual) black dots in the middle of the under-side white spots. The next thing to ascertain was whether this four-spotted variety is permanent, or rather recurrent, in that district, or whether it was only accidental in that one year. Mr. Ross has now settled this point satisfactorily by finding similar specimens in the past month (July), and also by the opportune discovery that among specimens of *Artaxerxes* caught by him three years ago, and given away, this variety also existed. So far as I know Fifeshire is the only Scottish locality for this form, which possesses a distinct interest as a further advance in the known direction of variation in this species.—ID.

Colias Edusa on the Lancashire coast.—My children have just brought in a perfectly fresh specimen of *Colias Edusa*, which one of them netted on the sandhills here this afternoon. Mr. T. Baxter, a local Lepidopterist, tells me several were seen in the early summer, so evidently the spring immigration extended well over England.—GEO. T. PORRITT, St. Anne's-on-Sea, Lancashire : *August 19th*, 1892.

Colias Edusa in Monmouthshire.—I saw a male specimen of this species this morning, between this place and Llandogo. It was caught by my companion, the Rev. Frank Lowe, of Guernsey. The specimen was in fine condition, and had, apparently, recently emerged from the chrysalis. Possibly the occurrence of this species so far west may be worth recording.—H. GOSS, Tintern, Monmouthshire : *August 5th*, 1892.

Colias Hyale and Edusa at Surbiton.—I went out for an early walk this morning to some lucerne and clover about two miles distant, and caught eight *C. Edusa* and one var. *Helice*, also one ♀ *C. Hyale* before 9.30! I have never before found *C. Edusa* var. *Helice*, nor *C. Hyale* in Surrey, and, except in August, 1877,

have never seen *Edusa* in Surrey. I could have caught five times the number of *Edusa*, and possibly of *Helice* and *Hyale*, but was interfered with by men who were cutting the lucerne and clover. *Vanessa Io* and *V. Atalanta* are both out in unusual numbers, and also *V. cardui*.—ID., Surbiton : August 17th, 1892.

Colias Hyale and Edusa at Tonbridge.—Between the 3rd and 8th of June I saw six specimens of *Colias Edusa*, and this month it has swarmed in two clover fields about 1½ miles from the town, but I have only seen about a dozen specimens elsewhere. A friend of mine captured one specimen of the variety *Helice* on the 9th, and I took a single specimen of *Colias Hyale* on the 8th. I do not think *C. Hyale* has been taken here since 1868. My friend took one specimen of *Edusa* in 1887.—P. L. BABINGTON, Judde House, Tonbridge : August 13th, 1892.

Agrotis raveda in Wiltshire.—In the third week of July I had some successful sugaring in Wiltshire. I took several specimens of *Noctua depuncta*, and also a good series of *Agrotis raveda*. This species appeared suddenly in fair numbers on July 21st, and came to sugar pretty freely for the three nights following. It flew early, and was as quiet when feeding as its common relation, *Agrotis exclamatoris*.—MARY KIMBER, Cope Hall, Enborne : August, 1892.

Capture of Erotesis baltica, McLach., in quantity.—This Trichopterous insect has been known as British from a few specimens taken at Wicken Fen. This year I went down to Cambridgeshire on June 30th with the hope of taking the species, and upon the first afternoon of my visit to Wicken I was fortunate enough to take ten specimens flying among the weeds which grow along the edge of the "lode" (a canal which drains the Fen); and upon several occasions I took odd specimens at the same place when we had favourable conditions, namely, a warm afternoon without wind. On July 17th I went over to Fordham, and took a specimen upon the bridge which spans the stream flowing through the town; on the 22nd I again went over to Fordham and Chippenham Fen, and at the latter place took two specimens by beating bushes.

The following week I removed my quarters to Fordham with the intention of more thoroughly working Chippenham Fen, and on the evening of July 30th, after a most unsatisfactory day's collecting, my wife, who had been sweeping the reeds on one of the ditches, called my attention to some insects in her net, which proved to be *E. baltica*. I then turned my attention to my own net, where I found a number of specimens. We then worked the ditch, and in the space of about ten minutes we had taken forty-four specimens, and might have taken more, but that a cold gust of wind swept over the Fen, and caused the insects to seek sheltered quarters; we seemed to have come across the insects during their evening flight, as many were taken *in copulâ*. The insects were not at all scarce on the various ditches; some evenings I took as many as fifty specimens. Mr. McLachlan, who joined me for a few days, was also able to take several specimens, although during his stay the weather was not favourable for this insect.

Mr. Albert Houghton gave me a specimen which he captured at light on the 11th of August at Wicken. I shall be glad to send specimens to Neuropterists, both British and continental, who may desire the species.—JAMES J. F. X. KING, 207, Sauchiehall Street, Glasgow : August, 1892.

[*Erotesis baltica* was described in the "Revision and Synopsis," p. 326, pl. xxv (1877), from a few specimens taken in the island of Æsel, and in Finland; it has since been found in Sweden, according to Pastor Wallengren, and in Switzerland (Katzensee) by Dr. Ris: so its distribution is evidently extensive. As British it was known by four examples taken by Dr. Wheeler at Wicken in 1877 (*cf.* Ent. Mo. Mag., xiv, p. 162), and Mr. Porritt took a single specimen in 1891 at the same locality.—R. McLACHLAN].

Review.

THE LEPIDOPTERA OF DORSETSHIRE; or, a Catalogue of Butterflies and Moths found in the County of Dorset. Second Edition: by C. W. DALE, F.E.S. Dorchester: Henry Ling. Pp. 76, 8vo. 1892.

We favourably noticed the first edition of this Catalogue in 1886 (Ent. Mo. Mag., xxiii, p. 96). At that time 1302 species were recorded for the County, and in this second edition the number is raised to 1432, or an addition of 130 in six years, a large majority of which are *Tineina*, a Family thoroughly worked by the local entomologists, and especially by Messrs. E. R. Bankes and N. M. Richardson. The Catalogue is nicely printed, with comparatively few "printer's errors," and some redundant matter that appeared in the first edition has been advantageously omitted. It should be in the library of every working Lepidopterist who attends to County distribution.

Obituary.

L'Abbé Léon Provancher died at Cap Rouge, Quebec, in April, in his 72nd year. He was a French Canadian, and known as the Editor of the "Naturaliste Canadien," which was mainly written by himself, and contained much that was outside the pale of Natural History. Yet he was a genuine Naturalist, with broad general knowledge. His speciality was *Ichneumonidæ*. The "Naturaliste" was continued for several years, and was then relinquished, and subsequently resumed. Some of his entomological contributions to that Journal were published, with additions, in a collective form—"Petite Faune Entomologique du Canada"—which is somewhat of a literary curiosity.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *August 8th*, 1892.—Mr. R. C. BRADLEY in the Chair.

Mr. G. W. Wynn showed a boxful of moths taken on sugar during two nights at Wyre Forest, including a nice row of *Aplecta tineta*, also *Cossus ligniperda*, *Cy-matophora* or, &c. Mr. C. J. Wainwright showed a nice series of *Xylota sylvarum* from Wyre Forest, forms of *Amphydasis betularia*, intermediate between the type

and *Doubledayaria*, &c. Mr. A. JOHNSON showed a series of *Charocampal Epenor*, *Sphinx ligustri*, &c., and some varieties of *Arctia Caia* from larvæ fed on lettuce.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
July 28th, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. Frohawk exhibited seven specimens of *Epinephile hyperanthus*, L., bred from ova ; also a variety of *Sesia formiciformis*, Esp., having the usual red colour replaced by burnished gold ; likewise living pupæ of *Colias Edusa*, Fb., *Vanessa cardui*, L., and *V. Atalanta*, L. Mr. South exhibited *Zygæna trifolii*, Esp., out of a number taken in Middlesex, these showing great variation in the size and colour of the spots, and in the colour of the hind-wings, and stated the series exhibited contained all the known varieties ; also *Asthena Blomeri*, Curt., taken in Buckinghamshire near the London border, and made remarks thereon. Mr. C. G. Barrett, *Vanessa c-album*, L., and pointed out differences between the first and second broods ; a discussion ensued, the general opinion being that the species was certainly double brooded. Mr. Frohawk remarked that he had recently been to the New Forest, and took three white-spotted specimens of *Argynnis Paphia*, the variety *Valezina* was fairly common, and *Limenitis Sibylla* exceedingly so, and very late in appearance.

August 11th, 1892.—The President in the Chair.

Mr. West (Streatham) exhibited a series of *Apamea ophiogramma*, Esp., and *Eupithecia succenturiata*, L. Mr. Barrett remarked that the *ophiogramma* were very dark, and one specimen unusually so ; Mr. J. A. Cooper said the species was frequently taken at Chingford. Mr. Russell, a handsome specimen of *Pieris napi*, L., from Woking, the upper wings being strongly suffused with black and the spots unusually large. Mr. Barrett said the specimen was much more strongly marked than those from the north of Ireland. Mr. Russell also exhibited a series of varieties of *Epinephile Janira*, L., males and females, from Abbots' Wood. Mr. H. Moore exhibited three insects from the Amatola Mountains, South Africa—*Platyleptura divisa*, Germ., a pretty *Cicada* with moth-like coloration and markings ; *Phylloptera prasinata*, Stål, a green tree cricket ; and *Ædipoda pictus*, a grasshopper showing considerable variation in the density of the colouring of the hind-wings, the specimen shown having a faint tinge of yellow, while in others it is developed almost to opacity. Mr. Hawes exhibited a larva of what he originally thought to be *Hesperia comma*, L., but remarked that its lateness in that stage had made him feel doubtful as to its identity, and he was now satisfied that it was *Nisoniades Tages*, L. ; a discussion ensued, in which it was pointed out by Mr. Frohawk that the larva of *comma* was distinguishable from *Tages* by the white markings on the 10th and 11th segments, and which were to be found on the under-side. Mr. Hawes also called attention to the tendency to lightness in colour in many species of butterflies during the present season. The President read a letter from Mr. Jäger, in which he reported the capture of *Callimorpha Hera*, L., from South Devon, and again came forward to defend it as a British species, which he had always done from the first.—H. W. BARKER and A. SHORT, *Hon. Secs.*

ELENCHUS TENUICORNIS, KIRBY, PARASITIC ON A HOMOPTEROUS
INSECT OF THE GENUS *LIBURNIA*.

BY EDWARD SAUNDERS, F.L.S.

On the 20th of last August, about 3.30 p.m., I was sweeping for *Hemiptera* near Surbiton, along the side of Claygate Lane, and caught a *Liburnia*, which I should probably have let go had I not observed that it seemed to have something attached to it posteriorly. Wishing to examine it more closely, I put it into my cyanide bottle, and was much astonished on looking at it, when I got home, to find that a ♂ *Elenchus* was in the act of emerging from its posterior segments, and had been killed in that position.

The capture is a peculiarly interesting one, as it settles the question as to the host which nourishes *Elenchus*.

Sir S. S. Saunders "Monographia Stylopidarum, &c.," Trans. Ent. Soc., 1872, p. 24, says that the host was supposed by Templeton to be *Bombus*, who, however, corrected his mistake, seeing that *Bombus* did not occur in Mauritius where *Elenchus Templetoni* was found. Sir S. S. Saunders suggests that the *Formicidæ* would be more probable associates, as *Myrmecolax*, a genus of *Strepsiptera*, was already known to be parasitic upon them: a specimen, however, caught in the very act of emergence settles the question conclusively.

There is, I believe, only one other record of a *Strepsipterous* parasite attacking *Hemiptera*, viz., *Colacina insidiator*, Westw. This is recorded by Prof. Westwood, Trans. Ent. Soc., 1877, p. 185, as parasitic on *Epura subtilis*, Walk., one of the *Fulgoridæ*.

The very small size of the host in comparison to its parasite is most remarkable, the *Liburnia*, which is in the nymph state, not being more than $2\frac{1}{2}$ mm. in length. I am not certain as to the exact species it belongs to, but it is one of the pale ones, and probably allied to *brevipennis*. The parasite is emerging from the ventral side of the abdomen, but the segments are so distorted that I cannot determine for certain between which two it is making its exit. The head, elytra and front legs are free, and the bases of the wings are visible; the ventral side of the parasite is uppermost, *i. e.*, lies towards the body of the *Liburnia*; this is apparently a matter of interest, as in the genera *Stylops* and *Hylecthrus* (*fide* Sir S. S. Saunders) the ♂ escapes from the puparium with its ventral side towards the body of its host, whereas, the ♂ of *Xenos* escapes with its dorsal side towards its host. It would be worth while for Hemipterists to watch for *Homoptera* with unusually distorted bodies, as very probably now that the nature of its host is

known, *Elenchus* will be found to be less rare than hitherto supposed, and the discovery of the (at present unknown) ♀ would be of great interest.

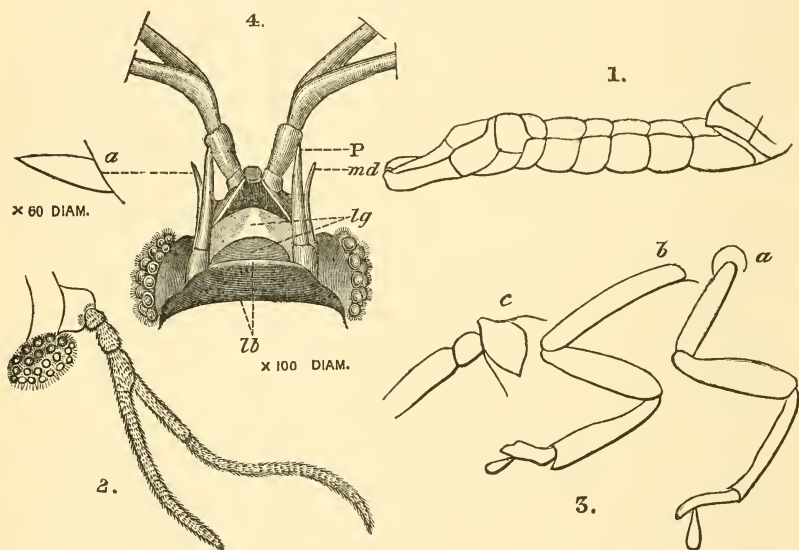
The Rev. A. E. Eaton also captured this rarity within a day or two of the capture of mine, and is sending an excellent description and figures of his specimen, so that I need not enter into any details as to structure, &c.

St. Ann's, Woking :

September 17th, 1892.

NOTES ON *ELENCHUS TENUICORNIS*, KBY., WITH ILLUSTRATIONS.

BY THE REV. A. E. EATON, M.A., F.E.S.



On August 22nd, shortly after 4 o'clock in the afternoon, a ♂ *Elenchus tenuicornis* was casually swept by the net off young hazel shoots in a shady part of a lane at Stoney Stoke, a hamlet in the parish of Shepton Montague, near Bruton, Somerset. It was passed at once into the killing bottle, and mounted dry in a paper cell that evening as a microscopic object.

After comparing the specimen with the figures and descriptions of *Elenchus* given in Westwood, *Introd. Mod. Classif. Ins.*, ii, 288, &c., fig. 94, 1—6, S. S. Saunders, *Stylopid. Monogr.*, in *Trans. Ent. Soc. Lond.* (1872), p. 31, &c., and Fowler, *Coleopt. Brit. Isl.*, v, 457, it has seemed desirable that advantage should be taken of the opportunity

afforded by it, to learn if possible the true relations of parts which have been subjects of dispute, and to draw up a careful description of the species as far as possible. Mr. E. Saunders most kindly lent his specimen to facilitate this undertaking, and thereby enabled a figure to be given of the mouth parts, and a better view to be had of the elytra than was obtainable otherwise.

Head subquadrangular, transverse. Vertex transverse, shorter than the breadth of the eye-cluster, defined anteriorly by a sinuate border extending right across between the eyes; upper surface transversely depressed in the middle; posterior margin descending behind the eyes. Eyes collective, about twenty to the cluster; the facets hemispherical, their interstices velvety with erect hairs; the clusters rotund, flattened laterally, subsessile, but with the orbits slightly salient beneath anteriorly. Frons subtriangular above with the apex obtuse, descending steeply to the oral aperture, compressed laterally in advance of the eyes, where it projects, like a hollow sphenoid beak, above the mouth, with a shallow median furrow down the apex. Antennæ 5-jointed, inserted towards the upper part of the sides near the extremity of this frontal projection, reaching, when thrown back, nearly to the base of the abdomen; 1st joint very short, subcompressed; 2nd joint short, moderately stout, obtusely obovoid; 3rd joint perfoliate, prolonged outwards at the tip into a filiform or linear acuminate lobe to upwards of twice the length of the next joint, which is inserted in a concavity in the upper-side of its ovately dilated base; 4th joint filiform or linear, elongate; 5th joint also filiform or linear, acuminate, about twice the length of the preceding joint, and longer than the distance of its own base from the antennary foramen. Oral aperture ringent, in the form of an isosceles triangle with the apex anterior and depressed, bounded laterally by the frons and at the base by the ligula. Labrum undeveloped. Mandibles articulated with the slightly protuberant genæ opposite the middle of the inferior orbits of the eyes, closing together beneath the ligula with their points crossed, but when open obliquely prorect; in form very acutely triangular, curved outwards moderately towards the point and somewhat triquetrous; minutely pubescent externally. Maxillæ undeveloped. Ligula largely developed, undivided, prominent and obtusely rounded in front (so far as one can judge, allowing for shrinking and perspective). Labium short and vertical; palpi inserted at the anterior lateral margins of the labium, 2-jointed, with the basal joint short, the 2nd elongate and subulate, obliquely prorect.

Prothorax and mesothorax both very short and transverse; pronotum longer and a little wider than the mesonotum; prosternum inversely shorter than the mesosternum. Metathorax massive, longer than broad; postscutellum ending in a short projection over the basal half of the 2nd abdominal segment.

Intermediate legs closely approximated to the anterior, and remote from the hind legs. Anterior coxal cavities open behind; intermediate coxæ stouter than the anterior, which are transverse. Trochanter elongate in the two anterior pairs, short in the hind leg. Tibiæ spurless. Tarsi 2-jointed; basal joint oblique and concave posteriorly, ending in an obtuse lobe; 2nd joint claviform, more slender in the fore tarsi than in the hinder tarsi, rounded at the tip and furnished with numerous papillate hairs, but without claws, and inserted in the concavity of the 1st joint.

Elytra cochleariform or ladle-shaped ; stipes loosely folded longitudinally, and costate at or near the anterior margin, the rib at the terminal expansion running straight on to the end ; stipes and the said expansion concave on the under-side ; the tip everted. Insertion of elytron extended longitudinally from directly above the anterior coxa and below the pronotum to just in front of the upper anterior angle of the base of the intermediate coxa below the mesonotum. When they are depressed, the elytra tend to furl the wings.

Wings well represented by previous authors, partly furled in this specimen, minutely ciliated at the terminal and inner margins ; membrane, when moderately magnified, stippled very finely and densely, but when magnified more highly (100 diameters) intricato-rugose, closely and delicately, and beset with extremely minute erect hairs.

Abdomen extended, slender, shorter than the wings and (reckoning the forceps-basis) 9-jointed ; basal segment oblique, adnate dorsally to the thorax ; 8th segment produced obliquely under the base of the terminal segment ; this last segment squarely excised nearly to the base, the sides remaining and constituting compressed bases terminated by the forceps-limbs. These are 2-jointed ; basal joint elongate, tapering posteriorly from the base, which is narrower than its support, and incurved towards the apex ; 2nd joint clawlike, reflexed, nearly half the length of the former.

Referring to Westwood's woodcuts, cited above in the second introductory paragraph, it may be noted that the anterior margin of the vertex is not indicated in fig. 94, 1. His fig. 94, 2 of the head of *Elenchus* from below differs in important particulars from the specimens here described. The differences seem attributable to parts of the mouth not being all in focus at once, and to the palpi having been interposed between the eye of the draughtsman and the mandibles or margins of the oral aperture ; perhaps, also, a recollection of the palpi of *Stylops* (*l. c.*, fig. 93, 2 and 3), or the method of illumination of the object, contributed to artistic error. The difference noticeable between the antennæ here delineated and his fig. 94, 1 and 6, judging from the description of *E. Templetoni*, Westwood, quoted by Saunders, may be specific.

The terms *ligula* and *labium* are employed in the present paper in accordance with the usage of Packard, regard being had to the place of insertion of the palpi (*cf.*, 3rd Report U. S. Ent. Commiss., pl. xvii, 9).

Regarding the elytra as intrinsically notal outgrowths, it may be argued that their relations to parts below them are of only secondary importance in discussing the question of their being mesothoracic appendages. In *Elenchus* the mesonotum being of minimum proportions, and not affording sufficient accommodation for its appendages, the elytra unavoidably project their bases in advance of the lateral extremities of the mesonotum, and so are approximated as closely as

possible to the anterior coxæ and pronotum; and the pronotum is excavated at the sides to fit the enlarged bases of the stipes when the elytra are carried erect.

ELENCHUS TENUICORNIS, Kirby.

Stylops tenuicornis, Kirby, Trans. Linn. Soc., Lond., xi, 233 (1811).

♂. Dull black, with parts of the thorax piceous when light is transmitted. Frons, vertex, pronotum, mesonotum, abdomen and legs clad with dense, subappressed or slightly spreading black pubescence, which (chiefly at the margins of segments, the sides of the abdomen and genitalia, and towards the ends of the tarsi) on change of posture, becomes canescent or hoary. Metathorax and elytra puberulent, and in like manner canescent. Antennæ attenuated at the points, scabrous, densely clothed with short, slightly spreading, brownish-grey pubescence. Eyes jet-black, their interstices velvety, with short, erect, black, shifting to light grey, hair. Wings dull, with a talcose lustre, transparent light blackish-grey, with blackish nervures.

Length of body (genitalia included), 1.5 mm.

On comparison with Mr. Dale's two specimens of *E. Walkeri* (Curtis, Brit. Ent., folio and pl. 385 [1831]) the species appear to be distinct. *E. Walkeri* has the points of the antennæ less attenuated (*cf.* Curtis' figure), the thorax browner, and wings of a light brownish-grey tint. The specimens were named by Curtis, and are upwards of fifty years old.

EXPLANATION OF FIGURES (all enlarged),

illustrating *Elenchus tenuicornis*, made from the specimens by the author with camera lucida.

Fig. 1—Abdomen, obliquely from the side, × 62 diam., ventral surface uppermost.

(Figs. 1, 2 and 3 from the author's specimen).

Fig. 2—Antenna and eyes, from above, × 62 diam.

Fig. 3—Legs, × 62 diam.:—*a*, anterior; *b*, intermediate leg; *c*, hind trochanter and part of femur.

Fig. 4—Under-side of head, obliquely from behind, × 100 diam.:—*lg.*, ligula; *lb.*, labium; *P.*, palpi; *md.* (and *a* annexed, × 60 diam.), mandible. Drawn from Mr. Saunders' specimen (except *a* from the author's).

Shepton Montague, Castle Cary :
September, 1892.

LEPIDOPTERA AT ALDEBURGH.

BY THE REV. C. T. CRUTTWELL, M.A.

During a visit to Aldeburgh, on the coast of Suffolk, from July 10th to 27th, though the weather was unfortunately unpropitious, a cold north-east wind blowing nearly all the time, and sometimes with violence, a few interesting moths were secured. The best, perhaps,

was a beautiful greenish variety of *Ellopiæ fasciaria*, known as var. *prasinaria*, but very rare in British cabinets. *Acidalia emutaria* was not uncommon in the saltmarshes, and *A. rubricata* occurred on the sandhills north of the town.

Myelois cribrum and *Homæosoma binævella* were found in the most wind-swept situations, clinging closely to the stems and leaves of the *Onopordum* and other thistles. *H. nebulælla* occurred singly. *Rhodophæa advenella* and *marmorea* and *Pempelia formosa* were to be found, but rarely. Among *Crambites*, *Crambus falsellus*, *uliginosellus*, *selsellus*, and *salinellus* were the best species, all unfortunately few and far between; the first-mentioned settled on posts or low walls near the sea, the other three species in the saltmarshes. *C. perlellus* and *culmellus* swarmed; the former showed some beautifully marked varieties. *Platytes cerussellus* was abundant on the drier parts of the turf.

The *Scopariæ* were scantily represented. *Scoparia dubitalis*, var. *ingratella*, and *lineola* were the best species, but only one or two of each were seen.

Among *Pterophori*, *Amblyptilia acanthodactyla* occurred everywhere, especially on the coast sandhills, where it was abundant. *Platyptilia Bertrami* and *Leioptilus Lienigianus* were not uncommon on *Achillea millefolium* and *Artemisia vulgaris*, but usually at some little distance from the sea.

Tortrices, except a few common species, were difficult to obtain. *Tortrix viburnana* and *costana*, var. *laticornis*, were in the saltmarshes, but could by no means be induced to fly. *Penthina sellana* and *fuligana* occurred, each singly on the flowers among the sandhills. *Sericoris bifasciana*, *Retinia pinivorana* and *Coccyx nanana* were plentiful among Scotch fir. *Sericoris cespitana* and *lacunana*, var. *herbana*, occurred at Thorpe-by-the-Sea. *Dichrorampha saturnana*, *Phtheochroa rugosana* and *Eupæcilia affinitana* and *vectisana* were the only other species worth recording. These last two abounded in the saltmarshes.

Owing to the constant prevalence of cold wind, it was almost impossible to find the *Tineæ*, which undoubtedly abound at Aldeburgh. The genus *Gelechia* was tolerably well represented, as may be seen from the following catalogue, all from the coast sandhills:—*Gelechia distinctella*, *desertella*, *obsoletella*, *rufescens*, *terrella*, *affinis*, *diffinis*, *domestica*, *obscura*, *gerronella*, *senectella*, *marmorea*, *semidecandriella*, *humeralis*, *similis*, *anthyllidella*, *pictella*, and not far away *populella*, *fugitivella* and *dodecella*, *atriplicella* (one specimen), and *plantaginella* (abundant), occurred in the saltmarshes.

Talæporia pseudo-bombycella is common at Aldeburgh, but its flight was almost over before I arrived. *Diplodoma marginepunctella*, *So-phronia parenthesella*, *Æcophora lambdella*, and *Anarsia spartiella* were found on the heathy land just inside the marshes, besides many commoner species of little interest.

Among the various sea plants some good *Coleophoræ* turned up, especially *C. apicella*, *annulatella*, *tripoliella*, and *troglydytella*, as well as *Bucculatrix maritima* on the aster. *Elachista atricomella*, *luticomella*, *stabilella*, *cygnipennella*, and *dispunctella* crept up the stems of short grass one calm evening, and one or two species of *Lithocolletis* were secured in sheltered spots.

I feel sure the locality is extremely productive, and in a good season would yield many of the above species abundantly, besides several rare *Macros* which have been taken here in past years, and ought to be taken again, notably, *Bombyx castrensis*, *Sphinx pinastri*, and *Deilephila galii*. The salt dykes to the south, extending in countless ramifications for five miles in length by half a mile in breadth, and well supplied with local marine plants, should yield *Geometra smaragdaria* and *Psyche reticella*. But owing to the total lack of shelter, calm weather is indispensable. Inland the country is beautifully diversified with open common and frequent copses of Scotch fir and beech, which I did not attempt to investigate, but have no doubt produce a rich and varied insect fauna.

Kibworth Rectory, Leicester :

August, 1892.

NOTES ON A PROBABLY HITHERTO UNDESCRIBED FORM OF THE LARVA OF *PLUSIA GAMMA*.

BY GEO. T. PORRITT, F.L.S.

In the middle of July last, Mr. Charles Whitehead, of Maidstone, sent me, on the suggestion of Mr. Stainton, three larvæ for identification. The note accompanying the larvæ stated they were abundant, feeding on clover, nettle, thistle, &c., and that as *Plusia gamma* had been abundant earlier in the year, Mr. Whitehead thought they must be a form of the larva of that insect, although so totally unlike the ordinary well-known form. On opening the box I saw at once that Mr. Whitehead was right in supposing them to be a *Plusia*, but as I had no recollection of seeing any *gamma* larvæ at all like them in appearance, I doubted the correctness of assigning them to it.

Three days later, on July 18th, I received five more of the larvæ

from Mr. Whitehead, and although none of them were quite so dark in colour as one or two of the previous specimens, and one was much greener, they were evidently the same thing. At this time, too, they began to spin up, although still quite small, and as the pupæ seemed little more than a third the size of that of *gamma*, I became still more confirmed in my doubt about them, and having failed in my attempts to find a description of any larva agreeing with them, I began to have visions of a new *Plusia*!

On August 4th Mr. Whitehead sent me one of two moths he had just bred from some of the larvæ, and on the 6th he forwarded another; whilst, in the meantime, I also had bred a good specimen, the only one which emerged from my larvæ. All the moths were exceedingly small, less than half the size of a number of ordinary *gamma* which I netted for comparison on the Lancashire coast (where the species was flying in thousands) a fortnight ago. But, apart from size and the tone of colour, I could find nothing whatever to distinguish them from *Plusia gamma*. The colour was very perceptibly paler and more silvery, without any of the purple tint which characterized all the freshly emerged specimens I caught this year, and also all the specimens in my cabinet.

All the larvæ when full-grown were very small; probably half of mine died without spinning at all, and from those that did spin and change to pupæ, only one moth managed to emerge. Mr. Whitehead also wrote of his, that "many cocoons were imperfect and came to nothing."

The subject is very interesting, and possibly some of the readers of the Ent. Mo. Mag. may be able to suggest an explanation. The colouring of the larvæ I am satisfied was perfectly natural, and not due in any way to disease or feebleness. The larva I described was darker than the majority, but the others were sufficiently near it to be included in the same type.

Length, when full grown, about an inch. Ground-colour very dark olive-green, in one specimen nearly black: head and prolegs intensely black and shining: two very fine, interrupted, almost inconspicuous yellow lines extend through the dorsal region, followed outside by a broad, bright yellow, double subdorsal line, the outer of the two stripes being narrower than the inner; spiracular stripes also broad and bright yellow: tubercles raised, large and distinct, black, surmounted with a pale greyish-yellow spot, though these paler spots are less conspicuous on the side than on the dorsal tubercles, each spot emits a single short, stiff hair of the same grey colour: spiracles greyish-yellow, narrowly edged with brown: ventral surface dark olive-green, the prolegs having on the outsides a large cup-shaped black mark.

Huddersfield: September 7th, 1892.

NOTES ON THE LARVÆ OF *SWAMMERDAMIA APICELLA*
(*COMPTELLA*).

BY GEORGE ELISHA, F.E.S.

The eggs I have not yet been able to discover, but larvæ just hatched I have frequently found, and from the position of these small larvæ I conclude they are laid on the under-side of the leaves of sloe bushes growing in hedges; these small larvæ are generally solitary, but sometimes two are to be seen feeding between the same leaves, which are drawn closely together by a slight web, the larvæ eating away the surface of the leaves; as they increase in size they quit these drawn-together leaves, and spin a slight web across the twigs where they spring from the main stem, and become gregarious, five or six larvæ sharing the same web; in some of the younger branches smaller webs are occasionally seen tenanted by two or three larvæ only, they issue from these webs to feed on the nearest leaves, but hurriedly return to them on the slightest alarm.

The larvæ, when very young, are of a dirty greenish colour, and as they get older the spots along the back begin to appear, but hardly perceptible without the aid of a glass, but after the second moult the whole of the colours become brighter, and when full-grown the larvæ are of a dull green colour, rather velvety looking, tapering towards each end, and extremely lively, the dorsal line dark, and rather indistinct; on each side of the dorsal line is a row of dull red dots, viz.: two dots on each segment, one on each side of dorsal line, those on the middle segments being larger and more distinct than those on the tapering ends, head yellowish-brown, prolegs yellow, spotted with brown, anal legs green; when full-grown they drop to the ground and spin their long white cocoons in the dead leaves, or among the rubbish, and remain in the pupa state until the following May, when they emerge in a very desultory way all through the month, and far into June.

It was during a week's visit to Ilfracombe, in the early part of the month of August, 1890, that I first met with these larvæ, they were very small, in fact not long hatched, and not recognising them, just took a few to try and breed them, and later on was agreeably surprised when one or two emerged and I found what they were, which determined me to go again the following August to obtain a good supply, and endeavour to work out their entire life history. I was successful in again finding them, in all stages of growth, some full-grown, others about half grown and even smaller, but the majority I found were certainly not long hatched; I took a good supply, and was successful in breeding a fair number during last May and June, and placed many of them in a cage with some fresh blackthorn, which I kept renewed by placing fresh branches in once a week, leaving the old in the cage; I failed to get eggs, or even to see them paired,

notwithstanding I watched them every day early and late: they gradually died one after the other, so that by the middle of July I had lost them all.

It would appear from the fact of finding larvæ, or the majority of them, so very small early in August, there must be two broods, but I am inclined to think there is a continuance of emergence from the beginning of May till the first week in July, which would apparently account for larvæ being found in all stages of growth in the month of August, but I have not been able to verify this at present, mainly, from the locality being so many miles away; I have been unable to observe them in their native haunts during the whole of one season.

122, Shepherdess Walk, London, N.:

September 17th, 1892.

PSALLUS ALBICINCTUS, KBM.,
A NEW BRITISH SPECIES OF *HEMIPTERA*.

BY EDWARD SAUNDERS, F.L.S.

On the 13th of July of this year I beat a single female example of this species off a sallow at Chobham. Although I went again repeatedly to the same spot, I failed to secure any more; possibly I was too late in the season for it, and if so, have little doubt I shall find more next year. Kirschbaum quotes oaks, and Reuter oaks, beeches and sallows as its habitats; there were some oaks close to the sallows where I was collecting, but I could get nothing off them except *Psallus varians* and *diminutus*; still I think it is not improbable that oak may be its food-plant there, as the oak trees, although on the opposite side of a narrow lane, almost overhang the sallows.

PSALLUS ALBICINCTUS, Kbm.,
Jahrb. Ver. Naturk. Herzog. Nassau, Heft x, p. 332.

About the size of *diminutus*, Kbm., but rather shorter and broader, and the pronotum more convex. It may be known from any of its allies by its rather wider pronotum in front, and by the colour of the upper surface, especially of the clavus, which is of a greyish tint, being freckled with darker red spots, and also by the brown atoms with which the head and pronotum are sprinkled; there is a fine pale line down the middle of the pronotum and scutellum, and the hemelytra are of a deeper red than in *diminutus* or *variens*; the posterior femora are more incrassated, and the anterior tibiæ are armed with more numerous and thicker black spines.

One specimen (♀) on *Salix*, Chobham.

St. Ann's, Woking:

September 12th, 1892.

ANNOTATED LIST OF BRITISH TACHINIIDÆ.

BY R. H. MEADE.

(Concluded from page 237).

40.—SCOPOLIA, DSV.

PHORICHETA, Rnd.

Gen. ch.—Species small, black, and glabrous, with oblong conical bodies; eyes bare; frontalia wide in both sexes; cheeks narrow, and armed with a long row of strong bristles, continuous above with the inner fronto-orbital setæ, which are in a double row in both sexes; facialia bare; chin large and setose; antennæ long, the third joint being from three to five times as long as the second; arista bare; abdomen mostly with both discal and marginal setæ; wings with the third longitudinal vein ciliated from the root to the little cross vein, or to a little beyond it; first posterior cell closed, and with a longer or shorter stalk, outer cross vein situated nearly midway between the inner cross vein and the bend of the fourth.

- 1 (2) Palpi black, and wing stalk short 1. *tricincta*, Rnd.
 2 (1) Palpi pale, and wing stalk long.
 3 (4) Antennæ narrow, and pale at the base 2. *carbonaria*, Pz.
 4 (3) Antennæ thick, and quite black 3. *lugens*, Mgn.

S. TRICINCTA, Rnd.

Frontal stripe subrufous; sides of frontalia and face grey, with dark reflections; antennæ black or grey, with third joint thick, and only about three times the length of the second; arista thickened nearly to the middle; palpi black; thorax black, rather æneous, marked in front with three short, wide, black stripes, and having some white pubescence on the shoulders and sides; post-sutural outer dorso-central bristles three in number; abdomen shining black, with a narrow white band on the front margins of the second, third and fourth segments, which are armed with both discal and marginal setæ; wings slightly tinged with brown, having the apical cross vein deeply incurved and joining the third near the costa, leaving a short stalk not more than a fourth or fifth of the length of the outer cross vein, which is slightly curved and placed a little nearer to the bend of the fourth than to the little cross vein; a short cubital appendix is sometimes present; third longitudinal vein ciliated as far as little cross vein; veins not nebulous.

This well marked species is not common. I captured it near Bradford in 1876, and again at Silverdale in Lancashire in 1881.

S. CARBONARIA, Pz.

Characters of head and face as in the former species, with the exception of having the palpi yellow, and the antennæ rather longer, much narrower, with their bases testaceous; the thorax is also similar; the abdomen is entirely black and less setose; the wings are fuliginous, with the fore borders very dark, and the veins nebulous; the apical cross vein is much less curved than in *S. tricincta*, and the

stalk is much longer, being about two-thirds of the length of the outer cross vein ; there is also sometimes a short cubital appendix.

Not common. In Mr. Dale's and Miss Prescott-Decies' collections.

S. LUGENS, Mgn.

Rather larger than the last species, with a long subcylindrical abdomen in the male ; frontalia with central stripe piceous and rather narrower than the sides, which are shining black, somewhat raised and tuberculated, having snowy-white reflections in certain lights ; face silvery-white and glittering, with dark reflections, and armed along its whole length with a row of strong setæ, continuous with the inner row of fronto-orbital bristles ; antennæ black and thick, with the third joint scarcely three times the length of the second ; arista thickened to about the middle, where it suddenly becomes thin ; palpi yellow ; thorax shining black and immaculate, with shoulders slightly grey ; abdomen black, very setose, and without discal setæ on the second segment ; alulæ large and white ; halteres with red stalks and white heads ; wings slightly nigrescent, especially along the front border, third longitudinal vein ciliated up to the little cross vein ; fourth vein bent at an obtuse angle, apical cross vein a little incurved, and meeting the third vein at some distance from the costa, so as to leave a stalk about three-fourths of the length of the outer cross vein, which is quite straight and centrally placed.

Rare. I have only seen a single male, which is in the Rev. E. N. Bloomfield's collection.

40A.—BRACHYCELIA, *n. g.*

SCOPOLIA, Schnr., *p.*

TACHINA, Zett., *p.*

Gen. ch.—Species small and black, with short ovoid bodies ; eyes bare ; frontalia wide in both sexes ; fronto-orbital bristles in a double row in both male and female, and extending as low as the apex of the second joint of the antennæ ; cheeks narrow and bare ; chin small ; facialia ciliated half or two-thirds of the way up ; antennæ long, with the third joint four or five times as long as the second ; arista bare ; thorax short and wide ; abdomen short, thick and oval, with both discal and marginal setæ ; wings with the third vein unarmed, with the exception of the ordinary two or three setæ at the root ; first posterior cell closed, and having a stalk of moderate length ; legs short.

I have separated this genus from *Scopolia*, from which it differs by the species being shorter and rounder in shape ; by having the facialia ciliated, and not the cheeks ; by the third longitudinal vein of the wings being without setæ ; and by the legs being shorter.

B. OCYPTERINA, Zett.

Frontal stripe dull and piceous, rather wider than the sides of the frontalia, which, with the face, are cinereous with dark reflections ; antennæ grey, with the second joint lighter in colour than the third ; arista thickened to about the middle ; palpi piceous ; thorax shining black, with slight grey pubescence, and having four

rather indistinct black stripes, and three post-sutural outer dorsal central bristles ; abdomen shining black and immaculate, alulæ dull white with pale yellow borders ; wings clear, with the stalk of the first posterior cell about half the length of the outer cross vein.

Not uncommon. I captured it in 1891 near Maidstone in Kent ; I have also received it from the Rev. E. N. Bloomfield of Guestling, and it has been bred from *Pterophorus tephradactylus* by Mr. Bignell and Mr. Butler of Hastings.

44.—TRYPHERA, Mgn.

Gen. ch.—Eyes hairy, approximate in male, wide apart in the female ; antennæ rather short, with the third joint about twice the length of the second ; arista bare ; facialia nude ; wings with the first posterior cell closed, and with a short stalk at the end, and the outer cross vein almost centrally placed between the little cross vein and the bend of the fourth.

I introduced this genus into my table under the impression that one of its species, viz., the *T. umbrinervis* of Zetterstedt had been found in Britain, but upon careful examination I have determined that the specimens which I had so named, as well as others that I had received from Germany under the same title, are only examples of *Exorista dubia*. According to Zetterstedt, his *T. umbrinervis* differs from *E. dubia* by having the third joint of the antennæ linear, and only twice as long as the second, instead of being thickened and fully thrice as long ; by the arista being only biarticulate, instead of triarticulate ; and by the first posterior wing-cell being always quite closed, and terminating at the apex of the wing, while in *E. dubia* it is often slightly open and ending a little before the point of the wing.

45.—LÖWIA, Egger.

MACQUARTIA, *p.* Rnd.

Gen. ch.—Species shining black ; eyes hairy ; frontalia straight, narrow in male and wide in female ; antennæ short, with the third joint but little longer than the second ; arista pubescent ; facialia nude ; abdomen rather wide and oval, with both discal and marginal setæ ; wings with the first posterior cell closed and stalked at the end.

This genus closely resembles *Macquartia*, with which it was combined by Rondani ; the only important distinction between them being the closed and stalked wing-cell.

L. BREVIFRONS, Rnd.

Shining black ; abdomen with a greenish tinge ; facialia with central stripe and sides black, the latter being elevated and glazed in the female ; face grey ; cheeks bare ; antennæ black, with basal joints testaceous in the female ; arista rather short, with the base thickened ; wings brunescent, with the stalk to the first posterior cell short, it being about one-fourth of the length of the outer cross vein ; alulæ brown ; legs black.

Rare. I captured both sexes near Bradford in 1877.

I have now finished my Annotated List of the British *Tachiniidæ*, to which I hope soon to add several fresh species. During the compilation of the later portions I found it necessary to deviate considerably from the analytical table of genera placed at the commencement, for I had fallen into several errors in drawing it up, and afterwards introduced two new genera; in conclusion, I shall, therefore, insert a short amended table of the last fourteen genera, continuing the same initial numbers, and also retaining the numerals originally given to the genera, though their position may be altered in the table.

- 68 (67) Forehead not glistening white.
- 69 (72) Fourth longitudinal vein bent at an angle.
- 70 (71) Head somewhat vesicular and swollen 35. *FRONTINA*, Mgn.
- 71 (70) Head not swollen 35A. *DESVOIDIA*, Meade.
- 72 (69) Fourth vein bent in a curve 35B. *DEGEERIA*, Mgn.
- 73 (66) Eyes hairy 36. *PHOROCERA*, Dsv.
- 74 (1) First posterior wing cell closed at (or before) the end (stalked or unstalked).
- 75 (78) Facialia ciliated.
- 76 (77) Wing-cell closed at the end (unstalked) 37. *BAUMHAUERIA*, Mgn.
- 77 (76) Wing-cell stalked.....40A. *BRACHYCELIA*, Meade.
- 78 (75) Facialia bare.
- 78 (89) Eyes bare.
- 79 (84) Cheeks ciliated with a row of bristles.
- 80 (83) Genal bristles continuous with the fronto-orbital ones.
- 81 (82) Antennæ long, and genal bristles large.....40. *SCOPOLIA*, Dsv.
- 82 (81) Antennæ short, and genal bristles small 38. *CLISTA*, Mgn.
- 83 (80) Genal bristles not continuous with the fronto-orbital ones ..
39. *RHINOPHORA*, Dsv.
- 84 (79) Cheeks bare, or with only a few scattered hairs.
- 85 (88) Alulæ of small or moderate size.
- 86 (87) Outer cross vein nearer to the inner one than to the bend of the fourth vein..... 41. *PLESINA*, Mgn.
- 87 (86) Outer cross vein nearer to the bend of the fourth than to the inner cross vein 43. *PHYTO*, Dsv.
- 88 (85) Alulæ very large 42. *LEUCOSTOMA*, Mgn.
- 89 (78) Eyes hairy.
- 90 (91) First posterior wing cell unstalked 44. *TRYPHERA*, Mgn.
- 91 (90) Wing-cell stalked.....45. *LÖWIA*, Egg.

Bradford, Yorks. :

August, 1892.

NOTE ON *STERNOCÆLIS*, AND ON ONE NEW SPECIES.

BY G. LEWIS, F.L.S.

On examining the claws of *Sternocælis* mounted in Canada balsam I find that it was an error of mine to have stated that they are not split (*cf.* Ent. Mo. Mag., 1891, p. 161). Pressed apart in the balsam two claws are shown, but when examined as an opaque object, even under a high power, the claws appear to be united. The remarks on the geographical distribution of the species of *Sternocælis* I made in this Magazine in June, 1891, have been singularly confirmed by my captures this spring, during two and a half months' tour in Tunisia and Algeria. I failed to find any of the species far from any of the centres recorded before as their localities, but I found the following species, and it will be of interest to those who are now working out the Algerian fauna if the places of capture are indicated, viz.:—

Sternocælis punctulatus, Lucas, Teniet el Had and in the Cedar Forest of Blida.

S. Cancer, Lew., Hamman Meskoutin, Blida, and in the Bois de Bologne near Algiers.

S. Sedilotti, Lew., Constantine.

S. Walkeri, Lew., Forest at Blida and at Algiers.

S. fulvus, Lew., Blida, near the flour mill.

S. Bonnairei, Sch., Bone, in the cattle market close to the town, and on Edough; also at Constantine and Souk-Ahas.

S. comosellus, Fairm., has been taken at Constantine by Mons. Eug. Simon.

STERNOCÆLIS VIATICUS, *sp. n.*

Breviter ovatus, brunneo-ferrugineus, hirsutus; capite leviter punctato; prosterno carinis sinuatis antice et postice haud conjunctis.

Long., $1\frac{1}{2}$ —2 mm.

Shortly oval, brownish, little convex, with rather long fulvous hairs sparingly set in rows; the head flattish above, surface obscurely rugose with large shallow punctures, lateral carinæ strong and well marked; the thorax transverse, gradually widening out to the base from the anterior angle, anterior angles rugosely, not deeply, punctured, disc smooth, basal fovea shallow, triangular, and placed well within the angle; the elytra almost smooth, humeral and first striæ complete, the others obsolete, but their position is indicated by rows of fulvous hair; the propygidium and pygidium have large shallow punctures not closely set; the tibiæ are dilated like those of the well known *S. punctulatus*, Lucas. The prosternum between the carinæ is marked with shallow punctures similar to those on the head, the carinæ widen out at the base and terminate at the angle, anteriorly the carinæ are widely sinuous before the coxæ, and end at the suture behind the lobe without approaching each other; the meso- and metasterna are moderately excavated and nearly smooth.

I found a single example of this species at Hamman Meskoutin

on April 22nd, and a second at Teniet el Had on May 1st. Both examples came from galleries eight or ten inches below the surface of the ground, made by an ant, which Dr. Emery informs me is *Aphænogaster striola*, Rog., var. *mauritanica*, Em.

Wimbledon: August 16th, 1892.

Nest of Osmia (?) *in a rain-gauge*.—I had an experience in Dublin on Saturday of which I want an explanation. I found inside the funnel of a copper rain-gauge at the Botanic Gardens a lump of clay attached to the side of the gauge. I thought it had been put there by some one, but on putting my knife to it to scrape it out, I found it harder than hard mortar. I then attacked the bottom which I found much softer, and to my surprise, dug out some six yellow maggots, very nearly ready to emerge, and of the shape of wasps, or more like drone bees, *i. e.*, they were much broader than wasps, but of the same length as large wasps. What were they? I think I have heard of some species of wasps that make clay nests. There were certainly not more than six in the lump of mud, which was about three inches round and half an inch in thickness.—ROBERT H. SCOTT, Meteorological Office, Victoria Street, S.W.: September 19th, 1892.

[The above was probably the work of an *Osmia*, but it is impossible to say of what species.—E. S.]

Hercyna phrygialis, Hb., *probably a British insect*.—While on a visit last autumn to the Rev. A. Matthews, of Gumley, I saw in his collection a moth of which he related this history. Many years ago, as Turner was returning from one of his collecting tours in Scotland, and called at Gumley with his captures on his way up to London, Mr. Matthews picked this specimen out as a *Pyralid* new to him. On taking the specimen to the Natural History Museum, Mr. Warren at once pronounced it to be a common Alpine species—*Hercyna phrygialis*, Hb.

I may add that, at the first glance, it bears a superficial resemblance to *Psodos coracina*, and it might possibly be passed over as that species. As to its origin, while there is nothing unlikely in the capture of this species among the Scotch Mountains, Turner was always considered trustworthy in his statements as to habitat, and apparently he neither knew or put any particular value on this specimen, so that I consider the probabilities to be in favour of the supposition that it was taken in Scotland.—PHILIP B. MASON, Burton-on-Trent: September 12th, 1892.

[We commend the above to the notice of Scotch Lepidopterists. We think no one ever doubted the honesty of Turner; the possible chance of error is that he may have received the insect from an intermediate source. Although abundant in the Alps, it occurs also on the mountains of Scandinavia. We need only cite *Zygana exulans* to prove how intensely local are some Scotch insects. Mr. Mason wrote "*Heryna*." This is an error in Staudinger's Catalogue, corrected at p. 424.—EDS.]

Pieris Daplidice at Folkestone.—On the 10th inst., while partridge shooting in this neighbourhood, I saw an insect rise from a stubble field, which, from its dark greenish appearance and heavy flight, I at once saw was not an “ordinary white.” It shortly settled on a leaf, where I had an excellent opportunity of inspecting it, and I fully decided it could be nothing but *P. Daplidice*. It rose again, and I followed it with the intention of knocking it down with my cap, but, in keeping it in view, I had already forged ahead of the other guns, and now the climax came; a covey rose out of reach, and amidst the execrations of my friends, I had to return a saddened man, for I fully realized that for the first, and probably the last, time in my life I had seen this insect in the flesh. I am still undecided whether “it is better to have seen and lost, than never to have seen at all.” [Excusable under the circumstances.—EDS.].

They say misfortunes never come singly, and on this day, at all events, the old adage proved correct in my case. While marking birds in that identical field my groom saw *Deiopeia pulchella* fly past him. As he was stowed away in a hedge he could not attempt to take it. As he has already brought me one, I have no doubt of its identity.—CHAS. E. PARTRIDGE, 2nd Royal West Kent Regiment, Shorncliffe: September 19th, 1892.

Plusia moneta at Shorncliffe.—I saw one of this species on the boards of a beginner who had taken it at light close to the Camp.—ID.

Colias Hyale, *C. Edusa*, and *Vanessa cardui* in the Channel Islands.—*Colias Edusa* has been extremely abundant this season in the Channel Islands. In Guernsey and Jersey they have been accompanied by *C. Hyale*, but these have been scarce. On visiting Alderney (August 4th to 11th) I found *C. Edusa* swarming all over the Island, and several times took three or four specimens by one stroke of the net. Most of the specimens captured were males; females were very scarce. A young gentleman residing in the Island, who has collected butterflies for several years, told me he had not seen the species before this season. *Vanessa cardui* was also extremely abundant on the thistles, which grow in such profusion in Alderney. They were all in fine, perfect condition.—W. A. LUFF, Guernsey: September 10th, 1892.

Colias Edusa (Helice) in the Isle of Wight.—In the beginning of this month I made a short stay in the Island, which (with the exception of half a day) I had not visited for more than thirty years. The entomological results were practically *nil*. A few notes on the butterflies that have made themselves conspicuous this year may be of some interest. *Colias Hyale* was seen from the train at Sandown Station. *C. Edusa* was widely spread, but not common, and mostly in a worn condition. Of the form *Helice* a good example was secured on a dusty roadside near Blackwater in the centre of the Island (I heard of another capture near Ryde). *Vanessa Atalanta* was in the utmost profusion everywhere, whereas, to my great surprise, *V. cardui* was observed only once, and *V. Io* not at all. Such was my experience; other observers can perhaps tell a different tale.—R. McLACHLAN, Lewisham: September 12th, 1892.

Colias Edusa (Helice) near Plymouth.—On the 10th I was collecting in a field about a mile from Knacker's Knowle, near Plymouth, when I had the good fortune to catch one *Helice*; there was very little clover in the field, but I was told that two *Helice* had already been caught there this year.—D. P. TURNER, 14, Havelock Road, Tonbridge: September, 1892.

Colias Edusa (Helice) in Surrey.—I observe that Mr. Goss states in this month's Ent. Mo. Mag. (p. 245) that he has never previously found *Colias Edusa* var. *Helice* in Surrey. In August, 1877, I captured a fine specimen of *Helice* a few miles from Guildford. Although *C. Edusa* could be taken in dozens in that year all round Guildford, I never saw a specimen of *C. Hyale*. Last month I saw several specimens of *C. Edusa* (male) on the cliffs between Broadstairs and Ramsgate; also *Vanessa cardui* and *Atalanta*.—GEORGE W. OLDFIELD, 21, Longridge Road, Earl's Court, S.W.: September 1st, 1892.

[Mr. Goss stated his personal experience, which, we imagine, by no means accords with that of many collectors in the County.—EDS.]

Colias Edusa (Helice) on the Kentish Coast.—Between the 18th and 20th of August I saw hundreds of *Colias Edusa* in splendid condition in the clover and lucerne fields and standing wheat near Deal, Upper Walmer, Ripple, and St. Margaret's Bay, and on the 20th caught a *Helice* settling on clover at the last named place. *Vanessa cardui* accompanied them in thousands, but the other *Vanessæ* were conspicuous by their absence. I saw two *urticæ* and only about half a dozen *Atalanta* in places where they are usually countless.—G. W. KIRKALDY, St. Abb's, Wimbledon: September 3rd, 1892.

Colias Edusa at Rugby.—This afternoon, whilst out with a net on the canal bank near here, I saw a fair number of specimens of *Colias Edusa*, and netted two males in very good condition. A specimen was also taken on the same spot last May. As this insect is very rare here, I thought that perhaps this record of its appearance might be interesting.—ST. JOHN W. LUCAS LUCAS, 36, Albert Street, Rugby: August 26th, 1892.

Colias Edusa in North Devon.—It is perhaps worth noting, to complete the record, that *Colias Edusa* was frequently seen during August last on the close cropped pastures of Morthoe and the golf links of Westward Ho! I had not observed the insect in that corner of North Devon since 1877.

As regards other insects, *C. cardui* has been decidedly common this season, but not nearly as abundant as in 1879 and 1884. *Plusia gamma* is always common here, but not this year more so than usual; on the other hand *Vanessa Atalanta* has been commoner, especially on the flowers of *Eupatorium cannabinum*, than I ever remember seeing it, and *Argynnis Paphia* has also been exceptionally plentiful.

Speaking generally the insect fauna of this parish is extremely meagre.

Dr. F. A. Dixey kicked up a specimen of *Stilbia anomala*, an insect we had long been on the look out for. Sugar yielded many common things, the best being *L. conigera*, *M. literosa*, *Agrotis velligera*, *suffusa* and *saucia*, *T. fimbria*, and *A. pyramidea*.—G. B. LONGSTAFF, Twitchen, Morthoe: September 18th, 1892.

Deiopeia pulchella, &c., in the Hastings district.—A specimen of *Deiopeia pulchella* was taken at Battle on June 4th by Miss D. M. Roper, and another specimen was seen in a garden at Guestling in the last week of August. *Vanessa cardui* and *Colias Edusa* have been very abundant in the neighbourhood, and the form *Helice* has not been very uncommon; some specimens of *C. Hyale* have also been taken, two of them at Guestling. I have been informed that *Deilephila galii* has been taken at the electric light in Hastings, which has also attracted sundry *Sphinx convolvuli*.—E. N. BLOOMFIELD, Guestling Rectory: September 19th, 1892.

Hesperia lineola in Nottinghamshire.—When looking over the collection of Mr. J. N. Young, of Rotherham, the other day, I saw in it a specimen of *Hesperia lineola*, taken by himself, in the year 1880, somewhere on the Clumber estate, in that portion of Nottinghamshire known as the "Dukeries." It is very curious that this species should keep turning up from fresh localities.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E.: September 20th, 1892.

Boarmia repandata.—I have been fortunate in breeding a fine series of this variable insect from larvæ taken in this neighbourhood during the spring of this year. They vary from a well marked ordinary southern form to an intense velvety black; these latter are quite as dark as the Huddersfield form, and, in fact, could not be any blacker. Some of the specimens approach the West of Scotland form, whilst some of the black specimens have the zigzag subterminal line on the underwings of a clear white, which is very striking.

For several years occasional black ones have been bred by Mr. Batty of this town, and myself, but never to the extent of what I have bred this year. Perhaps the chief reason has been that by working hard for the larvæ I was fortunate in breeding a larger number of specimens than has been usually done in this district. About one in every four would be an almost black variety, and one in eight a perfectly jet-black form.—A. E. HALL, Nerbury, Sheffield: September 12th, 1892.

Eros (Pyropterus) affinis, Payk., near Doncaster.—At page 243 of last number I notice that in recording the capture of *P. affinis* at Aviemore, Mr. Champion remarks that the only other recorded British localities are Killarney and Sherwood. In addition to these localities I may say that I took several larvæ from a rotten stump in Green Farm Wood, near Doncaster, on October 23rd, 1890. All but one were successfully reared, emerging in the middle of May, 1891. The capture was duly recorded in the "Naturalist" of that year. I have several times since searched for this species in the same locality, but so far without success.—E. G. BAYFORD, 158, Doncaster Road, Barnsley: September 7th, 1892.

Lebia cruz-minor at Gomshall.—While collecting at Gomshall towards the end of August, I visited the ground on which two years ago I found *Nabis boops*, in the hopes of getting some more specimens of this rare Hemipteron. A small isolated patch of *Calluna*, not more than a yard in diameter, which had yielded me the bug on a former occasion, was the first to be searched, and there sure enough was the insect again this year; but I had no sooner captured it than on turning up the next portion of the heather my eye lighted on a beautiful example

of *Lebia crux-minor*, and immediately afterwards another fell to my lot from the same spot. The fine grass just outside this patch also yielded *Corimelæna scarabæoides*.—E. A. BUTLER, 39, Ashley Road, Crouch Hill, N. : September 1st, 1892.

Rare Diptera in 1892.—*Limnobia trimaculata*, *pulchella*, *bicolor*, and *nigrina*, *Tipula plumbea* and *fascipennis*, *Pachyrrhina scurra*, *Ptychoptera scutellaris*, *Chironomus flexilis*, and *Phorostoma maritima*, at Bournemouth; *Tipula Diana* (one only), *Phalacroceræ replicata*, *Pachyrrhina analis* (two males), *Thaumastoptera calceata*, *Rhaphium longicorne*, and *Syrphus cinctus*, at Lyndhurst; *Tipula nigra* and *Helophilus lunulatus*, at Shapwick, Somerset; *Limnobia pictipennis*, *Thaumastoptera calceata*, *Tipula hortulana*, *Nephrotoma dorsalis*, *Doros conopseus*, *Chilosia maculata*, *Psychoda albipennis* and *ustulata*, and *Leptopeza flavipes*, at Glanvilles Wootton.—C. W. DALE, Glanvilles Wootton : September 1st, 1892.

Brachypalpus bimaculatus, Mcq., in South Devon.—At the commencement of last July Mr. G. C. Bignell sent me for identification a fine pair of *Brachypalpus bimaculatus*, Mcq., which he had taken in Bickleigh Vale, South Devon, a few days before. I believe there is only one British pair of this rare insect in the Entomological Collection at South Kensington, which was taken at Clifton, near Bristol, some years since.—CORYNDON MATTHEWS, Erme Wood, Ivybridge, South Devon : September, 1892.

Æschna juncea in Surrey.—On the 17th inst. my brother and I took three specimens (2 ♂ 1 ♀) of this usually northern species in the same locality which in June we took *Sympetrum Fonscolombii*; *Æ. cyanea* and *grandis* were also out sparingly; *S. scoticum* and *striolatum* were common, and we also noticed a few *Enallagma cyathigerum*.—C. A. BRIGGS, 55, Lincoln's Inn Fields : Sept. 19th, 1892.

Reviews.

BUTTERFLIES OF THE RIVIERA: by FRANK BROMILOW. 8vo, pp. 115. Nice (Alpes Maritimes): Libraire Galignani. 1892.

Judging from the frequent requests we have had to indicate some work in the English language treating on the Butterflies of the Riviera, this somewhat bulky pamphlet should supply a want. It does not pretend to be more than an Annotated Catalogue, with local information, and somewhat copious notes on the egg and larval stages and food-plants. About 170 species (exclusive of local and other forms) are indicated. The author apparently resides in the Alpes Maritimes (from which the "Département" takes its name) themselves, and those who only visit the shore region are likely to miss the seventeen species of *Erebia*, and also others. The pamphlet is very well got up. We must hold the author responsible for the substitution of "Families" for "Genera" in the Index, at p. 105.

DIRECTIONS FOR COLLECTING AND PRESERVING INSECTS: by C. V. RILEY, M.A., Ph.D. (forming Part F. of the Bulletin of the United States National Museum, No. 39). Pp. 140, 8vo. Washington: Smithsonian Institution, 1892.

This profusely illustrated work is of a dual nature, the first 26 pages consisting

of what is practically an elementary hand-book of Entomology. In the eyes of the majority (not all) of British Lepidopterists it will seem to have one great defect: the author (like most Americans) abjures the use of *short pins*, the adoption of which is so deeply rooted in this country that nothing short of being "sent to Coventry" can be said to await the unhappy individual who has the courage to dissent from the practice. But British Entomologists will find very much to instruct them in these "Directions;" and some contrivances explained of which the majority of them are ignorant, all rendered the more simple, inasmuch as to almost every matter of interest there is an excellent accompanying illustration. Some of these points are original, or American ideas, others again have been in force on the Continent of Europe for very many years, but are little known here. One of these is the "fumigator," a simple apparatus for driving insects out of dense places of concealment. Another, which we have always been surprised to find so little known here, is the "umbrella" (not the umbrella *net*, but a jointed *modification* of the real article, and which can be used as such), a most excellent apparatus for beating purposes, and suitable for all insects, excepting those unusually active on the wing.

On the other hand we think that scarcely sufficient notice has been taken of the methods of collecting in use amongst British Entomologists, and especially Lepidopterists, and the perusal of some practical book, such as Knaggs' Lepidopterist's Guide, will supply American Entomologists with a host of hints on matters not treated upon here, or just barely alluded to. But in America, as everywhere else, the main point to be gained is experience.

The details upon Museum work are admirable, and afford useful information on many points concerning the preservation of soft-bodied insects in alcohol, &c. The production of a highly illustrated collector's manual like this is, at present, practically possible only in the States, for it is the outcome of the expenditure of public, or semi-public, money. Just fancy the astonishment of a British Chancellor of the Exchequer at being asked to provide funds for a book on the collection and preservation of insects!

The work ends with a list of "recommended" books and periodicals, &c., on Entomology. In perusing the List of Foreign Periodicals, we fancy our German friends will be as much surprised as ourselves on finding it indicated that the "Berliner entomologische Zeitschrift" and "Stettiner entomologische Zeitung" have been "discontinued."

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *September 12th, 1892.*—Mr. G. H. KENRICK, Vice-President, in the Chair.

The following were exhibited:—By Mr. Neville Chamberlain, a box of *Lepidoptera*, which he had recently collected in Inverness-shire; by Mr. P. W. Abbott, a long series of *Colias Edusa* from Freshwater, Isle of Wight, including half a dozen *Helice*, and one specimen intermediate; by Mr. W. Harrison, two specimens of *Colias Edusa* from Trench Woods, also larvæ of *Sphinx ligustri* from the same place; by Mr. R. C. Bradley, *Zygana trifolii*, var. *confluens*, and one specimen of *Emmelesia taniata*, both from Barmouth; by Mr. G. H. Kenrick, *Plusia bractea*

from Scotland, and *Euperia fulvago* from Sherwood Forest and Cannock Chase. Mr. Colbran J. Wainwright read a paper upon "Isolation as a Factor in the Evolution of Species," in which he endeavoured to show that not only were the indirect effects of isolation very considerable, but that directly it performed an important part in the divergence of species without the assistance of natural selection. Considerable discussion followed, in which Messrs. G. H. Kenrick, Neville Chamberlain, and R. C. Bradley joined.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *Sept. 12th, 1892.*—

Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Mr. F. N. Pierce, F.E.S., read a paper, entitled, "Some further researches upon the genital structure of *Lepidoptera*." The author described the different species in the genera *Acronycta*, *Agrotis*, *Noctua*, &c., and showed that in cases where the identity or otherwise of species was disputed the genitalia might often be used as a sure means of differentiation. The paper was illustrated by the author's preparations of these parts thrown upon a screen by the aid of oxy-hydrogen micro lantern, and by photographs and specimens of each species described. The President exhibited varieties of *Angerona prunaria*; Messrs. Gregson and Robson, series of *Abraxas grossulariata*, showing variation produced by food; Mr. Scowcroft, varieties of *Xanthia cerago*; Mr. Wm. Johnson, a fine variety of *Vanessa urticae*, which had the ground colour very pale, *Bombyx rubi*, in which the bands were absent, and *Orgyia fascelina* with a mass of dark scales near the centre of the costa of the fore-wing; Mr. Prince, varieties of *Abraxas grossulariata*, and a specimen of *Colias Edusa*, nearly the var. *Helice*, captured at Wallasey; Mr. Harker, *C. Edusa* from Crosby; Mr. Crabtree, a large series of *C. Edusa* captured at Sidmouth, S. Devon, who remarked that he had only taken one var. *Helice* among fifty-six *Edusa*.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool: *September 15th, 1892.*

NOTES ON COLLECTING BUTTERFLIES IN THE SOUTH-EAST OF FRANCE.

BY WILLIAM EDWARD NICHOLSON, F.E.S.

To naturalists who have not sufficient leisure to be able to wander far afield, there are, perhaps, few more interesting localities than the south-eastern portion of France. The pleasant recollections of my experiences at Digne in June, 1890, in company with my friends, Messrs. Jones and Lemann, and already recorded by the former in this Magazine, made me very willing to comply with the suggestion of Mr. Lemann, that we should again visit these favoured regions.

It was a great treat to escape from the cold and sunless summer of 1891 in England into the warm district of the Mediterranean, as the weather throughout our stay in the south was magnificent.

We arrived at Arles, our first halting place, about mid-day on the

11th July, and spent the rest of the day in examining the various antiquities for which Arles is famous; several leaves from the history of Europe being here plainly written in stone. The next day we went out to the old Church of Aliscamps, an ancient temple of Diana, which was converted into a Christian Church by St. Trophime in the fourth century. The road to Aliscamps is well planted with trees, among which *Ailanthus glandulosa*, which flowers and seeds here very freely, and *Celtis australis* predominate. We kept a sharp look out on the latter tree, which is very abundant about Arles, for *Libythea celtis*, but failed to find any trace of it. The road is also lined by a row of huge sarcophagi, extending nearly all the way from Arles to Aliscamps, about a mile, the spot having been a favourite burying-ground of the early Christians. We netted a few *Spilothyrus alceæ* flying over a piece of rough ground near the Church, and saw *Vanessa Egea* flying about, but very little else worthy of notice. From an entomological point of view, the neighbourhood of Arles did not look promising, as the surrounding country, as seen from the top of one of the towers built by the Saracens on the old Roman amphitheatre, and forming part of the large delta of the Rhone, is remarkably flat.

We left Arles on the 13th, and went on to Cannes. Although it was rather hot, collecting at Cannes was very enjoyable. Our favourite ground was near La Bocca, about two miles from Cannes. A pleasant ride in a tram, past gardens filled with palms, orange trees, dracænas, eucalyptus, and all the varied sub-tropical vegetation which flourishes so well in this district, took us out to La Bocca, and about half a mile further out along the same road we found some promising country near a little knoll covered with pines, on the north side of which there was a rough bank, and some fields of lucerne, round the margins of which we found a good many butterflies. We both obtained a good series of *Satyrus Circe*, which was common on scabious flowers, and also specimens of *Colias Edusa*, var. *Helice*, *Pieris Daplidice*, *Anthocharis Belia*, *Epinephele Janira*, var. *Hispulla*, and several common species. The heat made an occasional visit to the shade of the pines desirable, where it was very pleasant to lie on the grass and listen to the ceaseless grating of the *Cicadæ*, and to watch *S. Circe* disputing the possession of the flowers.

We left Cannes on the 16th, and after taking the train as far as Grasse, drove on to Castellane, a small town among the mountains, about half-way between Grasse and Digne. It was very warm at Grasse, and the air seemed laden with a luxurious perfume of orange blossom from the various scent works: a pleasant effect, which the

inhabitants of Digne would do well to imitate. Soon after leaving Grasse we passed through some rough country covered with a scrubby growth of box, *Rhamnus alaternus*, the red wig-tree (*Rhus cotinus*), with its handsome feathery inflorescence, and large patches of *Cistus salviæfolius*, which must have been very handsome in the spring. Among these bushes we found a good many *Epinephele Ida*, flying with *Hesperia Actæon*, *Thecla spini*, and an occasional *Gonopteryx Cleopatra*. Further on the country was not quite so promising.

We stayed the whole of the next day at Castellane, but found the district rather too much cultivated to admit of much collecting; we netted, however, a few *Lycæna Telicanus* flying round the fields of lucerne, and also a specimen of *Papilio Alexanor*.

On the 18th we drove by diligence from Castellane to Digne, a hot dusty drive of about thirty miles, for the most part quite without shade. We did not see much to notice in the way of butterflies, with the exception of *Lycæna Admetus*, var. *Rippertii* on lavender flowers, but saw on the way very clear indications of the severity of the previous winter in the remains of several old olive trees, which had been killed outright in the fields by the frost.

We arrived at Digne about three weeks later than the time at which we left the year before, and, consequently, found quite a different set of butterflies, the members of the genus *Satyrus* predominating. It would be difficult to say which is the best month to visit Digne for butterflies, as the season is so long. In fact, to do the locality justice, it would be necessary to arrive at Digne about the middle of April, when *Erebia Epistygne* comes out, and to stay until the end of August, when *E. Neoridas* and *Satyrus Arethusa* are getting over.

Our best collecting ground in the immediate neighbourhood of Digne was the district on the north-east side of a mass of rock, called La Colette, at the foot of which the greater part of the town is built. The central portion of this ground is mostly cultivated, but there are gorges on either side running down to the roads leading to the village of Les Fourbes, and to Barcelonnette respectively, both of which are very productive. This property belongs to a M. Brachet, of Marseilles, who lives at Digne during the summer, and whose permission should be sought before collecting there. His reception was most cordial and good-natured, and after offering us hospitality, he invited us to roam at our pleasure over his domain. He seemed to be much interested at the enthusiastic way in which we pursued our prey, notwithstanding the heat, and after some reflection he said in confidence to Lemann, "Je crois bien que vous êtes enragés de courir ainsi dans le soleil." Other

good localities were the rough slopes on the right hand bank of the Bléonne above the bridge at Digne, the steep hill-side behind the old disused Cathedral, and the bed of the torrent near the sulphur baths with the gorges leading out of the same.

The most interesting expedition to be made from Digne is to the limestone ridge of Les Dourbes, where the local *Erebia Scipio* flies in some abundance. The village of Les Dourbes is situate about six miles from Digne, and the locality for *Scipio* is about two hours' rough walking beyond the village, so that it is necessary to make an early start, as the whole journey is best performed on foot; a road available for carriages only running for about three miles out of Digne. We made this excursion twice, leaving Digne on both occasions at 5 a.m., which did not give us more time than was required. The country between Digne and the village is very barren; the dry dusty road being occasionally lit up by the beautiful blue thistle, *Echinops ritro*, in the hottest and driest places. The locality for *E. Scipio* is the steep rough bank below the precipitous ridge of Les Dourbes, and formed by the denudation of the ridge. A portion of this bank, immediately below the highest point of the ridge, is covered with wood, and it is on the rough, almost bare, ground to the right of this wood that we found *E. Scipio*. It is rather difficult to pursue, owing to the steepness of the slope, but it has the fortunate habit of occasionally settling on the flowers of *Nepeta cataria* and *Cacalia alpina*, which grow here and there in scattered patches. This species offers a beautiful example of the advantage of protective resemblance to the female. The male is very black and conspicuous, whether flying or at rest, but the female has the under-side of the hind-wings of a pale grey colour, exactly like the rocks on which it settles, and which renders it almost invisible when at rest. The device must be fairly successful, as out of between seventy and eighty specimens, we only took five or six females, although the latter are feeble fliers as compared with the males.

It was too late to take the great local rarity, *Thaïs Medesicaste*, var. *Honnoratii*, in the perfect state, but the larvæ of *Medesicaste* were common wherever their food-plant, *Aristolochia pistolochia*, which grows freely on most of the dry hill-sides with a southern aspect, occurred. I collected a considerable number, as I had been fortunate enough to breed four *Honnoratii* in the spring from larvæ collected in June, 1890. This beautiful variety, which seems to be peculiar to the Digne district, is interesting as showing how a distinct form may spontaneously arise. It is in a large measure to *Honnoratii* that Digne owes its entomological celebrity. A considerable portion

of the male population of Digne appear to lie in wait for it when it appears in May, and you are liable to be approached in the streets with a torrent of voluble *provençal*, the upshot of which is that you should purchase for some fabulous sum a specimen of this variety that the fortunate native or his son has secured in the spring.

We left Digne on the 29th July, and stopped for a few days at Grenoble on the way home, whence we made an excursion to La Grande Chartreuse; but we had left the sun behind us in the south, and the old familiar leaden skies with rain began to frown upon us. Judging from the number of interesting and local plants that we noticed on the way to the Monastery, it ought to be an excellent locality in fine weather. We were, however, a little disappointed in seeing a collection of butterflies made by one of the monks and shown in the library of their Monastery.

I have appended a few notes on some of the most interesting species noticed at Digne during our stay, besides those mentioned above:—

Papilio Podalirius.—A second brood was not uncommon, especially near almond trees. *P. Alexanor*.—The imagines noticed of this species were mostly worn. The larvæ, however, were to be found in all stages on *Seseli montanum*. The larva is very conspicuous on its slender food-plant, which it frequently entirely demolishes.

Leucophasia Duponcheli.—A second brood; the variety *æstiva*, of Staudinger, of this local species was common all round Digne. The characteristic green markings of the under-side of the hind-wing are entirely absent in the male, and only very faintly indicated in the female of the summer form.

Thecla (Læosopis) roboris.—A few worn specimens were taken in the gorges leading out of Brachet's land.

Lycæna Meleager.—The male of this species was common round Digne, and a few specimens of the handsome females were taken, including three specimens of a brown variety approaching the variety *Stevenii*, of Treitschke. *L. Admetus*, var. *Rippertii*.—A fairly long series was taken flying round the flowers of lavender (*Lavandula spica*). *L. Iolas*.—A few larvæ of this fine blue were found in the unripe pods of the bladder senna (*Colutea arborescens*), which was common about Digne, especially on the hill-side at the back of the old Cathedral.

Libythea celtis.—One specimen of this curious butterfly was taken on bramble blossom on Brachet's property. The celtis tree does not appear to be indigenous about Digne, so probably the larva will feed up on some other tree, possibly *Prunus padus*, which is very abundant.

Melanargia Galatea, var. *leucomelas*.—A fair proportion of the females of *Galatea* taken about Digne were of this form.

Erebia Stygne, *E. Tyndarus*, and *E. Goante*.—Les Dourbes, flying with *E. Scipio*. A few *E. Neoridas*, which was just beginning to emerge, were also taken on the occasion of our second visit to Les Dourbes on the 28th July. *E. Neoridas* is abundant about Digne in August.

Satyrus Circe.—Fairly common about Digne, but not so abundant as it is further south. *S. Briseis*.—Common in dry stony places, especially on the way to Les Dourbes. *S. Fidia*.—A good many males of this species were taken, but it is difficult to catch, from its habit of settling on the bare rock. *S. Actæa*.—Abundant all round Digne. It is very partial to a small species of *Centaurea*. This species must be quite distinct from *S. Cordula*, which is common on the same banks rather earlier in the season. *S. Arethusa*.—One specimen only. It is common at Digne in August.

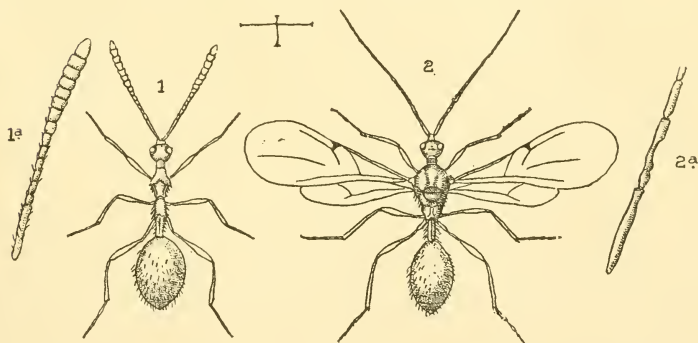
Syrichtus carthami.—Rather common in the bed of the torrent near the sulphur baths. Some specimens approach the variety *Moeschleri*. *S. Alveus*.—A few specimens of this protean species were obtained, which appear to be referable to the var. *cirsii*.

Hesperia lineola and *H. Actæon*.—Both these species were common round Digne, and frequented the lavender.

Lewes : 1892.

ON A NEW GENUS AND SPECIES OF *BELYTIDÆ* FROM NEW ZEALAND.

BY THE REV. T. A. MARSHALL, M.A., F.E.S.



The two insects in fine condition here described are undoubtedly ♂ and ♀, as shown by the circumstances attending their discovery. The apterous ♀ differs widely from the other sex, yet not more than in the other cases of sexual disparity with which we are familiar among the Proctotrypids; the discrepancies are mainly due to the loss of wings, a degradation of structure always accompanied by an undeveloped thorax; and in this instance by the almost total obliteration of the ocelli, which seem to exist as mere rudiments under the integument of the vertex, while in the ♂ they are external and fully formed.

The antennæ of the ♀ are 15-jointed, and those of the ♂ have the

3rd joint (or 1st joint of the flagellum) emarginate; characters which at once refer the insects to the group of *Belyta* rather than that of *Diapria*. On comparing them with Förster's tables and observations, in the Hym. Stud., Hft. ii, which remain to this day the best authority upon the subject, but contain only European forms, I cannot assign them to any established genus, and it is necessary to invent a new one. This I have named *Tanyzonus*, in allusion to the attenuated form of the female thorax; I believe this compound word, however obvious, has not been used before. The genus being founded upon both sexes, and accompanied by a biological notice from Mr. Hudson, the discoverer, which gives a glimpse of the unknown habits of an entire group, possesses a degree of completeness and stability far from common amongst insects of this kind.

TANYZONUS, n. g.

♀. *Oculi pilosi. Ocelli obsoleti. Antennæ clavatæ, 15-articulatæ. Thorax angustissimus, compressus, ubique in eadem planitie situs qua et caput et petiolus, cætero abdomine multo minus elevatus; prothorax in colli speciem breviter productus; mesonotum spina obtusa utrinque armatum; scutellum nullum; metathorax horizontalis, apice quadrispinulosus. Alæ omnino nullæ. Pedes graciles, subelongati, femoribus tibiisque clavatis. Abdomen capite cum thorace paulo longius; segmentum 1^{um} metathoracis fere longitudine, cylindricum, angustum, 3-canaliculatum; pars posterior maxima, elliptico-globosa, thorace fere quintuplo latior, e segmentis 5 (ut videtur) superne conflata, quarum tria apicalia brevissima, annuliformia, suturis ægerrime distinguendis. Terebra occulta.*

♂. *Longe alius. Oculi vix pubescentes. Ocelli conspicui. Antennæ longiores, filiformes, 14-articulatæ, articulo 3^o extus exciso. Thorax omnibus numeris absolutus, elevatus, capite multo latior; mesonotum bisulcatum, ad paraptera spinula utrinque armatum; scutellum optime determinatum, fossula antecedente instructum; metathorax declivis, petiolo plus duplo latior, apice bispinulosus. Alæ amplæ, nervis sicut in *Belyta* instructæ, sed cellula radialis longissima, apice aperta. Abdomen quale in ♀, sed nusquam thorace latius; pars posterior minus inflata; segmenta apicalia in conspectu 5 brevissima, annuliformia.*

T. BOLITOPHILÆ, n. sp.

♀. *Rufo-testacea, oculis nigris; paulo obscuriores sunt antennarum radiculæ, prothorax, metathoracis limbus undique, petioli basis cum segmenti 2^{di} margine antico. Corpus totum læve, pilis pallidis plus minus obsitum.*

♂. *Niger, antennis, mesothorace, pedibusque rufis; abdomen infra et apicem versus rufo-piceum. Alæ subhyalinæ, nervis et puncto stigmatico sordide rufo-testaceis; præsto sunt in ala anteriore nervus subcostalis; radialis costæ parallelus, ante alæ apicem abruptus; intercubitalis 1^{us} curvatus, im-*

perfectus; cubitalis basi et apice obsoletus; præbrachialis completus; analis basi incompletus: in ala posteriore nervus subcostalis, præbrachialis transversus.
Long., ♂ ♀, 2 lin.; alar. exp., ♂, 4½ lin.

I abstain from giving tedious details, as the accompanying outlines will give a better idea of these creatures than many words, and I flatter myself that they will now be unmistakeable, at least, until other species of the same genus shall be discovered. I have not taken any characters from the under-side, the specimens being carded; hence the oral organs could not be described, but they may be pretty safely assumed to resemble those of *Belyta*, *Anectata*, &c., and their details would have been of little value. The under-side of the abdomen of the ♀, should, however, have been examined, in order to count the segments, the sutures being hardly visible from above. The 2nd and 3rd segments are soldered into one, which covers almost the whole abdomen like a shield, leaving only the narrow edges of the apical segments visible, and these, in the ♀, are not easily counted.

EXPLANATION OF FIGURES.

Fig. 1, ♀; 1a, antenna.

Fig. 2, ♂; 2a, basal joints of antenna.

Botusfleming Rectory, Hatt, Cornwall:

September 27th, 1892.

NOTE ON *TANYZONUS BOLITOPHILÆ*, MARSHALL, PARASITIC IN THE NEW ZEALAND GLOW-WORM.

BY G. V. HUDSON, F.E.S.

During the early part of June a young friend of mine (Mr. Albert Norris) informed me that he had found pupæ of the New Zealand "glow-worm" (*Bolitophila luminosa*) attached to rocks in the big gully of the Botanical Gardens, Wellington, which, from their shrivelled condition, appeared to have been killed by some parasitic insect. I at once examined one of these pupæ, and found that it had been destroyed by a species of *Hymenoptera*, apparently nearly allied to the Family *Ichneumonidæ*. The pupa of the parasite was imbedded in a quantity of refuse matter in the centre of the unfortunate glow-worm pupa. As is often the case with the *Hymenoptera* a single specimen only was contained in each host.

On June 21st one of the parasites appeared in the perfect condition. It was apterous, and resembled in the closest possible manner a worker ant; on a further examination, however, I found that the

insect was really referable to the Family *Proctotrypidæ*. On June 23rd another parasite emerged. This specimen was furnished with ample wings, and is consequently the male.

The discovery of this parasite adds another chapter to the already remarkable life-history of the New Zealand luminous Dipteron.

Wellington, New Zealand : 1892.

NOTES ON SOME BRITISH AND EXOTIC COCCIDÆ (No. 24).

BY J. W. DOUGLAS, F.E.S.

LECANIUM CAPRÆ.

Coccus capræ, Linn., S. N., ii, 741, 14 ; De Geer, Mém., vi, 440, 2, t. 28, figs. 13, 14 ; Modeer, Göth. Vet. Handl., i, 22, 15 ; Gmel., S. N., i, 2218, 14 ; ? Fonscol., Ann. Soc. Ent. France, iii, 213, 3.

Lecanium capræ, Sign., Ess. Cochen., 245, 20, pl. xi, fig. 14.

Coccus cypræola, Dalm., K. Vet. Acad. Handl. för 1825, 367, 5, tab. iv, figs. 13—15.

Coccus gibber, Dalm., *id.*, 366, 4, t. iv, figs. 11, 12.

Lecanium salicis, Bouché, Stett. Ent. Zeit., 1851, 112, 3.

♀ adult. Scale chestnut-brown, sometimes lightly mottled with yellowish, smooth, shining, large, high,

almost circular, highest and broadest anteriorly, but narrowed (at times constricted), and more or less briefly produced posteriorly, very tumid, overlapping and clasping half-round the small stem of the food-plant, nearly perpendicular in front, vertex at times slightly gibbous, the curve thence forwards abrupt, backwards declivous ; scarcely punctured above the margin ; anal cleft with parallel sides. Antennæ (fig. 1) stout, of six joints : the 1st short, with two hairs ; 2nd twice as long, with one hair ; 3rd much longer than all the remainder together, constricted and narrower near the apex, with two hairs at the constriction ; 4th to 6th short, equal ; 4th and 5th each with one hair ; 6th with about six. Legs (fig. 2) stout, tibiae about one-third longer than the tarsi, each with few short hairs ; digitules short, ordinary.

Diameter and height, 6 mm. ; or length, 7 mm., breadth, 6 mm. ; height, 6 mm.

♂ scale grey-white, smooth, ordinary.

Larvæ ordinary, yellow ; eyes piceous.

Almost all the authors that have described the Linnean species give some species of *Salix* as the food-plant. Fonscolombe, however, gives also as habitat, "Cytise des Alpes et sur l'Arbouzier," but it

may be doubted if his description applies to Linné's *C. capreæ*, and also if his observation refers always to one species, although he says: "Je ne doute pas que ce ne soit la même espèce, malgré la différence de l'habitation." Signoret had his one example from poplar. Dalman says his *C. cypræola* lives on various trees, among others on *Salix caprea*, and although he was inclined to believe it was the Linnean *C. capreæ*, he did not adopt the name because it was applicable to other species living on that plant, including his *C. gibber*, which, in some of its stages, he says it much resembles!

Coccus capreæ, Linn., is in the old lists of British *Coccidæ* cited by Stephens (Syst. Cat. Brit. Ins., ii, 368), but until now it has not been described in England. Walker omits it from his "List of British Hemiptera," 1860. In June, 1885, I found two ♀ and one ♂ scale on *Salix alba* in Beaufort Gardens, Lewisham.

In April, 1889, I received from Mr. F. P. Pascoe two ♀ scales of a *Lecanium*, obtained by the Rev. G. Henslow from a rose tree, about which I could not at the time determine: they were not *L. rosarum*, Snellen von Vollenhoven, which I had previously from Mr. G. S. Saunders, off roses at Canterbury. In July, 1891, Mr. James Eardley Mason sent a good many examples of a *Lecanium* found on a rose tree growing up his house at Alford, Lincolnshire. These are evidently the same species as the last mentioned, yet the habitat rather made me hesitate in the belief that they were, as they seemed to be, *L. capreæ*, and a microscopical examination alone could determine. Being precluded from this at the time I sent some to my ever willing aid, Mr. Newstead; and his examination, and drawings of the antennæ and legs, here reproduced, show decisively that the species is identical with that described by Signoret, and except the one discrepancy noticed below, it is otherwise conformable to the characters of the Linnean species. The antennæ (remarkable in the 3rd joint) and the legs are now first figured; Signoret only described the antennæ, and could not obtain the legs.

Curiously, among the specimens from Mr. Mason's rose tree were a few of full size, with a large, prominent *mamelon* on each side of the dorsum, the two distinctly separated from each other, just like Dalman's figure of his *C. gibber*. I drew Mr. Newstead's special attention to these forms, with reference to observation of the antennæ and legs, and he reports that these members are quite identical in character with those of the normal form of the insects living on the same rose stems; I must, therefore, conclude that they are all of one species, and that the difference in the contour of the scales is solely

the result of the action of the enclosed parasites, as set forth by Mr. Newstead in his note on the subject (*cf.* vol. ii, n. s., p. 267).

Dalman's *C. gibber*, stated to live on poplar, birch, hazel, and other foliage-trees, has the scale represented (*l. c.*) of several forms, varying so much that Signoret deemed there was more than one species. He took one, Dalman's No. 8, which he obtained from an alder, as the type, and figured it, as also did Westwood in his *Modern Classification of Insects*, ii, fig. 118, 18. I have already adverted (*Ent. Mo. Mag.*, xxiv, 101) to this form, of which I had two examples from an oak with *Lecanium fuscum*, and suggested that it is a variation of that species; I am now disposed to confirm this, and to believe that the gibbosity of the scale was caused by the action of parasites, and also that all the variations of the scale noted and figured by Dalman have been consequent on parasites, possibly of more than one kind, and are not of specific value; thus, his *Coccus gibber* cannot be maintained as a species.

Further, in his description of *Coccus capreæ* (*l. c.*), Linné has "antice obtusus et bifidus;" now, the latter word does not apply to the ordinary scale, but very well expresses the doubly-gibbous form; so it seems more than probable that he had at least some examples of this kind before him, perhaps all were so.

The identification of the parasites will be of much interest, and still more so the elucidation of the mode of life pursued by them to accomplish such peculiar results. I wonder if they are the larvæ of the Coleopterous *Brachytarsus*, which are known to live on *Coccids*; indeed, Dalman found two species of the genus in his *C. cypræola* (*cf.* vol. ii, n. s., p. 98).

Lewisham: August, 1891.

CALLIMORPHA HERA IN SOUTH DEVON.

BY W. BROOKS.

About the middle of August, 1882, I was staying a few days at Staplake House, the residence of Captain Colley, where also resided the children of the late S. L. Waring, Esq.—it was with his two eldest sons that I had been beating the hedges of both sides of a narrow lane for about half a mile; being nearly lunch time we retraced our steps leisurely down the centre of the lane; when near to a sharp turn in the lane I discovered a large reddish looking insect flying quite close round our heads, I instantly struck at it but missed it, when it darted into the hedge, and was soon dislodged, and captured, having evidently been displaced by our beating some twenty minutes earlier. Each of us was so excited at our new capture that we beat and re-beat all hedges for some considerable distance around without success for nearly a week, when another, a damaged specimen, was beaten out. I may here

mention, that as our new capture was shown to the numerous occupants of Staplake House, no particular surprise was elicited, as more than one soon declared they had seen several like that.

In August, 1883, two others were taken in the gardens at Staplake, and one found on the road just over the garden fences, but it was so damaged by having been run over by some passing vehicle, that it was not kept. In August, 1884, we were again beating hedges, a distance of three miles from where our former captures had been effected in the previous years, when the object of our search was again found by my young friend, Mr. Waring, who then asked me to bottle it for him, while so doing he took my net and was off again, and soon had his second capture; while he bottled this example I commenced to beat the hedge inside the field, when, in an instant, I had caught the third. All three being good specimens, the thought struck me as strange that our first and third captures were within three feet of a gate post, through this gateway they had been carting corn, a quantity of the straws had been torn from the loads and lodged on the fence, and from under this unlikely place the two were taken. The next day being Sunday, we were leisurely walking over our old hunting ground, when, by an accidental touch of the hedge with a stick, one bolted out and was caught, as it settled on the opposite bank, by Mr. Waring; on the Monday evening I, with Mr. Waring and two lads, had beat a narrow lane, so narrow, that by walking down the centre, one could and did net at both sides, the boys being at least twenty yards in our rear, when one of them called out that a large insect had just got up and flown over the hedges, in an instant to return exactly to where I was, and in another moment he was my prisoner, making in all five specimens, three of which had fallen to my share. Let me here note that undoubtedly this had been disturbed by the beating stick, had fallen, and rose to fly considerably faster than any found during the day-time.

Again, in 1885, I was on my old hunting ground in search of *C. Hera*. On the 12th Mr. Waring and I had gone up the same lane where our last insect in 1884 had been taken, my son (a lad of 12) had followed us later on in the same narrow lane, when he saw the object of our search on the wing, and he managed to get it. On the 16th, when returning from the Warren, an enclosure from the sea, we were beating on each side of the road, when, strange to say, *C. Hera* was again dislodged near a gate post where there were loose straws on the hedge.

In 1888, after a lapse of three summers, I again visited my old quarters arriving there on August 18th. On the 19th the mangled remains of a fine *Hera*, were found in Waters Lane. The weather now set in wet for several days, and nothing was found until the 31st, when one was seen to fly into a shrub (*Thuja aureum*) in the garden, was caught, and found to be damaged.

Mr. Waring and friends walked to Dawlish, and saw a fine one setting on a stone wall, of the var. *lutescens*, but failed to obtain it. On September 2nd I left for London, but left net and killing bottle with the garden boy, who caught me two more, which were duly sent me by Mr. Waring.

You will find that *C. Hera* has been found under various circumstances, and no fixed place I think can be given. My young friend, W. Waring, has found several of his own on a slope covered with long and coarse grass, &c., close to the Estuary.

Grange Hall, Rotherham :

September 15th 1892.

[While at Sheffield a few weeks ago, I was driven over by Mr. A. E. Hall to Grange Hall to see the collection of Mr. W. Brooks, gardener there. I found Mr. Brooks an enthusiastic collector, but also a somewhat aggrieved and injured man, sundry severe strictures passed some few years ago upon his captures of *Callimorpha Hera* still ranking in his mind. Documentary and other evidence produced by him so fully convinced me of the genuineness of his captures (some of which he still has), and of his own good faith, that I recommended him to furnish details of his captures for this Magazine. He was gardener to the late Samuel Long Waring, Esq., at The Oaks, Norwood, and from him imbibed a taste for entomology. After his decease, Mr. Brooks purchased at the sale one of his cabinets, which he still has, and thus provided, began to collect with energy; and was subsequently invited to Starcross, Devon, the residence of the guardian of Mr. Waring's children, to collect with the lads in their holidays. On this occasion he first met with *Callimorpha Hera*, as described by him, and his good fortune seems to have stimulated the lads and their schoolfellows to obtain and send him specimens, besides those he took in subsequent years. These details may seem unimportant, but they explain the captures upon which doubt has, through some misconceptions, been thrown. There is, in my opinion, no reason to doubt that from the date of Mr. D'Orville's capture of *C. Hera* in August, 1871, at the least, the insect has not only inhabited that district, but spread in increasing or decreasing numbers, as influenced by natural causes in the same manner as any other rare and local species. Whether, as has been suggested, it had, prior to 1871, been accidentally introduced to a nursery with plants from abroad, or whether it was a voluntary immigrant, are points which probably can never be settled; but, from the known difficulty experienced in introducing and colonizing *Lepidoptera* in new localities, the latter supposition appears the more probable. That the insect is now a well established and regularly occurring species in Devonshire admits of no question.—C. G. BARRETT, 39, Linden Grove, Nunhead, S.E. : *October 7th*, 1892].

FURTHER NOTES ON OUR RUSH-FEEDING *COLEOPHORÆ*.

BY JOHN H. WOOD, M.B.

I will first of all set right a point in the natural history of *cæspititiella* that my former notes left doubtful. I now find that the larva follows the usual rule, and that there is no irregularity, as I had supposed, in the age at which it begins to make its case, but that it sets about the operation shortly after the final moult has taken place.

It may be remembered that I also hinted at the probable existence of still another undescribed species, which, at the time of writing, I knew only in the larval state. Having now bred the moth itself in some numbers, I need hesitate no longer at introducing it. It is a small ochreous-grey species, without any trace whatever in the forewings of the streaks usually more or less present in the members of

this group, so that the name of *agrammella* may be appropriately applied to it.

COLEOPHORA AGRAMMELLA.

Exp. al., 4—4½ lines. Fore-wings narrow and very pointed, uniformly ochreous-grey, with the costa narrowly white as far as the fringe. Antennæ white, completely annulated with dark grey; occasionally in the ♀ the annulations are slightly interrupted underneath by the white ground colour. It has the narrow pointed wings of *cæspititiella* and *glaucicolella*, but may be known from them by its much smaller size, more completely annulated antennæ, and the absence of all indications of streaks in the fore-wings.

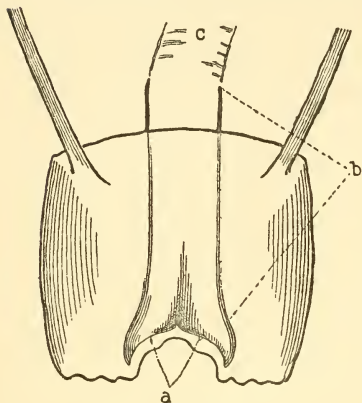
Larva white, slightly tinged with yellow. Head brown, a trifle clouded with grey on the crown, with the eyes black and the mouth parts brown. Thoracic plates grey; that on ii with a white dividing line; all four parts of the dorsal plate on iii present; on iv the two posterior parts or subplates are absent, but the anterior pair are unusually large and distinct. The ordinary spiracular plates are of nearly equal size, that on iv being only a trifle smaller than those on iii and ii. Anal plate black.

Its favourite food seems to be *Juncus conglomeratus*, but it occurs not unfrequently on *effusus* and *lamprocarpus*, and very rarely on *glaucus*. Probably it affects other rushes, but these are as yet the only ones on which I have found it. It becomes full-fed at the same time as *cæspititiella*, viz., about the end of October or a little later; it then hides away for the winter among the herbage, pupates in the spring, and the moth emerges in June. The case makes its first appearance, budding out from an opening in a capsule, when the larva is well advanced in its penultimate skin. It belongs to the class of simple cases, in which the seed envelopes of the rush are not used in the construction. It has quite a distinct character, and differs in several respects from any of the others. Its chief distinguishing feature is its colour, which is grey, sometimes almost black; it is also more thickly covered with particles of vegetable matter, and both ends of the case are equally roughened with them. These particles are disposed in broad longitudinal bands, leaving several (their number is variable) narrow smooth lines in the intervals, which are very noticeable in the fresh case, and highly characteristic, nothing approaching them being ever met with in the cases of the allied species. In general form, however, it resembles the case of *cæspititiella* or *glaucicolella*, except that it is much smaller.

This little *Coleophora* is a thoroughly woodland insect, widely distributed, but by no means common in this neighbourhood. As more than one case on a rush-head seldom occurs, collecting them is rather tedious work, whilst, yet further, they are apt, from their small size and dark colour, to be overlooked among the pale and more con-

spicuous cases of *cæspititiella* that crowd the plants at the same time. Doubtless it will turn up in many places, though both Mr. Fletcher and Mr. Banks, to whom I sent specimens of the case last year, failed to find it in their parts of the country.

Following the practice pursued in the first portion of these notes,

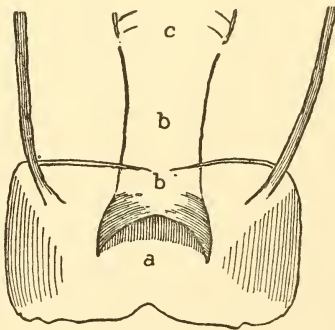


C. agrammella.

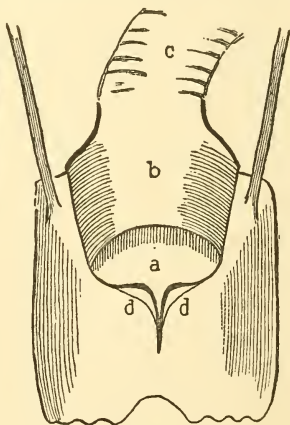
I will now give a figure of the ventral plate of the 8th segment in the female; and, at the same time, through the kindness of Messrs. Banks and Fletcher, who supplied me most liberally with material, I am able to complete this part of the subject, by adding also representations of the parts in *adjunctella* and *obtusella*, the two seaside members of the group. Lettered on the same plan as before, but few words of explanation are needed. All

three, it will be noticed, differ widely amongst themselves, and equally so from the five figured first. In *agrammella* the difference is even greater than

at first sight appears, for the outer portion (b) of the genital canal is internal to the plate, to the inner surface of which it is attached, and it opens



C. adjunctella.



C. obtusella.

externally just within the outer edge of the plate; consequently, the genital aperture lies behind the plate, just inside its edge. In *adjunctella* the arrangement holds an intermediate position. The outer portion (b) of the canal lies at first on the inside of the plate, it then pierces the plate nearly in its middle, and over the opening is thrown the strong chitinous hoop which is so striking a feature in the genitalia. I may add, that the distinction between the outer and inner portions

of the genital canal depends on the nature of the wall, which is chitinous in the one and fleshy or fibrous in the other, the line of demarcation being clearly defined.

EXPLANATION OF FIGURES.

a—genital aperture.

b—outer portion of genital canal.

c—commencement of the inner portion of the same canal.

d d—external pockets.

Tarrington, Ledbury :

October 10th, 1892.

NOTES ON ETHIOPIAN *RHYNCHOTA*.

BY W. L. DISTANT, F.E.S.

(continued from page 239).

Fam. COREIDÆ.

Div. DALADERARIA.

OVENGUA, *n. g.*

Allied to *Dalader*, A. and S., and *Hormambogaster*, Karsch, but differing from these genera by the following characteristics:—The basal joint of the antennæ is obsoletely tuberculated—much more prominently so in the immature stages of the typical species described—thus showing an alliance to the genus *Odontorhophala*, Stål. The head is very strongly emarginate between the antenniferous tubercles; the dilatation of the third joint of the antennæ is very much developed outwardly, but is scarcely perceptible inwardly; the rostrum reaches the intermediate coxæ; the pronotum has not the lateral angles produced in flat lobular dilatations, but angulated; the angles subacute, directed forwardly and a little upwardly; the abdomen is strongly dilated on each side, but the dilated margins are very uneven, deeply sinuated anteriorly, subquadrately produced at centre, and then regularly narrowed to apex; the femora are strongly spined beneath; the anterior trochanters have a mere obsolete basal spine or tubercle; other characters generally as in *Dalader*.

OVENGUA APERTA, *n. sp.*

Body above brownish-ochraceous; the membrane, dilated margins of abdomen, antennæ, legs, and under-side of body, fuscous. Antennæ pale fuscous, the third joint with its dilatation black, and its base pale fuscous (fourth joint mutilated). Body beneath speckled with black; femora with the spines and some very obscure tubercles blackish; tibiæ pale fuscous, spotted or subannulated with fuscous; tarsi pale fuscous.

Long., 29 mm. Max. exp. abdom., 20 mm.

Hab.: Old Calabar (*Rutherford*).

Fam. LYGÆIDÆ.

Sub-Fam. LYGÆINÆ.

TRANSVAALIA FLAVESCENS, *n. sp.*

Body above ochraceous; head, antennæ, legs, and scutellum, excluding apex,

very dark fuscous or black. Pronotum, with the anterior margin, sanguineous, which is preceded by a broad black fascia. Base of pronotum—centrally joining the anterior fascia—a broad, central, transverse fascia to corium, and the membrane pale fuscous, the last with the basal angle pale greyish, and with a discal ochraceous spot. Body beneath ochraceous; head beneath, transverse fasciæ to sternum, and the disc of the abdomen, blackish; anterior margin of prosternum, posterior margins of meso- and metasternum, and coxal spots, sanguineous.

Var. a.—Head, antennæ, and anterior fasciæ to pronotum dull reddish, not black.

Var. b.—Very pale in hue, the membrane greyish, and the transverse fascia to corium obsolete; antennæ dull reddish, with the apical joint much paler in hue.

The second joint of the antennæ is slightly, but distinctly, longer than the third.

Long., 12 to 13 mm.

Hab.: Transvaal; Pretoria.

This species can be easily recognised in all its varietal forms by the discal ochraceous spot to the corium. It constitutes a second species of the genus which I recently described (*Nat. in Trans., Append., p. 253*), and forms part of a collection of insects received from the Transvaal since my return.

Russell Hill Road, Purley:

October, 1892.

Colias Edusa (Helice) at Charmouth.—I was at Charmouth during August, and throughout the month found *Colias Edusa* common, and at times very abundant in a place on the cliffs just above the shore which abounded in the Melilot trefoil. We captured two of the variety *Helice*, and saw one other, and one was taken by another collector. *Coleoptera* were extremely scarce, in fact, as a rule, August is, from my experience, about the worst month in the year for beetles; I only found a single specimen of *Lebia chlorocephala*, var. *chrysocephala*, and *Trechus lapidosus*, which were abundant last year, seemed very scarce the only time I searched for it; a single specimen of *Cassida murrae* was the only other thing that occurred worthy of record. I might add that I saw, but did not capture, a specimen of the rare Hemipteron, *Deræocoris seticornis*, of which I have only seen three living examples.—W. W. FOWLER, Lincoln: October 7th, 1892.

Colias Edusa (Helice) in the Isle of Wight.—My experience in the middle of August was very different to that of Mr. McLachlan early in September. Between Bembridge and Sandown I found *Colias Edusa* in great abundance; I could have captured scores of them, especially in a clover field just north of Whitecliff Bay. I saw one *Helice* but missed it. *Vanessa Atalanta* was certainly extraordinarily abundant, as, indeed, I have also observed it to be in the following places this year:—Southwold, Suffolk; Downham Market, Norfolk; Outwell, near Wisbech in Cambridgeshire; Offley, near Hitchin, Herts.; and at Godalming, Surrey. It is curious how *Atalanta* swarms round a wound in the bark of oak trees in spite of repeated

disturbance. *V. cardui* I found tolerably abundant at Bembridge, particularly on the Golf Links. *V. Io* was certainly scarce, but I saw several specimens in the Bembridge neighbourhood.—OSWALD H. LATTEr, Charterhouse, Godalming: October 2nd, 1892.

Colias Hyale and *C. Edusa* (*Helice*) in Suffolk.—As I have not yet observed any record of these forms from Suffolk, it may perhaps be worth mentioning that they were abundant at Southwold, Suffolk, all this August. I saw several *C. Edusa* myself, and a boy in the house where I was staying caught numbers; he also captured one *Helice*. *C. Hyale* was quite common, but apparently only over a limited area in the low lying land close to the sea, just north of Southwold itself. I may also mention that *C. Edusa* appeared in the neighbourhood of the places above mentioned in Norfolk, Cambridgeshire and Herts, but was not plentiful, except near Hitchin. At the same time it must be borne in mind that the weather was cold and blustering when I was in Norfolk and Cambridgeshire, and therefore rendered it improbable that many would be on the wing.—ID.

Colias Edusa in Merionethshire, North Wales.—I saw a specimen of this butterfly in a clover field above the village of Harlech on September 13th this year, within a couple of miles of the spot where I saw one in September, 1876. I also saw two others near Maentwrog the following week, but I saw none in Carnarvonshire, either at Capel Curig or Bettws-y-Coed, where I stayed about a week from September 21st. As usual, *Lepidoptera* were scarce in North Wales. Larvæ of *Cucullia asteris*, *Botys terrealis*, and a *Tortrix*, were found on golden rod, but very locally; one specimen of *Stenopteryx hybridalis* occurred at Tan-y-Bwlch; one *Depressaria Alstræmeriana* at Harlech; three *Gelechia juncitella* were beaten out of oak at Capel Curig, along with *Cerostoma radiatella* and *sylvella*; *Grapta c-album* was abundant near Trefriw, with the three common *Vanessæ*; and a few more common moths, made up the remainder of a meagre result.—A. F. GRIFFITH, Brighton: October, 1892.

Plusia gamma.—The article by Mr. G. T. Porritt in the current number of the Magazine on a probably hitherto undescribed form of the larva of *Plusia gamma* immediately brought to my mind a similar experience during last July. On the 6th, 10th and 14th of that month my boys discovered several small half looper larvæ whilst searching amongst *Matricaria* for those of *Cucullia chamomillæ*. I was much puzzled with these larvæ, although I had a suspicion that they would produce *P. gamma*, but they were so totally different from the usual form that I thought I might be mistaken. Speaking from memory they exactly coincided with the description given by Mr. Porritt, and it was the dark olive-green colour of the stripes that so especially attracted my attention and caused my doubts, which were increased by the smallness of the larvæ at the time of the pupal change. Only three individuals assumed the perfect state, the remainder of the larvæ having died without spinning up, although constantly supplied with fresh food. Two specimens emerged on August 16th, and one later, but all were very diminutive, and had the same pale silvery appearance that struck Mr. Porritt. Two by accident escaped, but the third specimen is now in the cabinet. I may be mistaken, but I fancied that the usual

attenuated character of the front segments of the larvæ was absent in my individuals. As bearing upon Mr. Porritt's observations, you may perhaps consider these remarks worth publishing in the Magazine.—J. C. MILLER, Langley Road, Elmer's End, Beckenham, S.E. : *October 1st, 1892.*

Pterophorus Lienigianus in North Kent and South Devon.—As there are so very few published captures of this reputed local species, it will perhaps be of interest to place on record my taking a single specimen on September 19th, 1886, flying at dusk in our garden here, and a second in September, 1888, by beating hedgerows in the lane leading from Teignmouth to Haldou. This month the larvæ have not been at all uncommon in this district, but are confined to extremely restricted spots, having only been observed at four places in a radius of several miles, although their food-plant, *Artemisia vulgaris*, is abundant in many of our hedge banks, disused gravel pits, &c. An admirable account of the habits of the larvæ will be found in Vol. viii, p. 156, of this Magazine.—B. A. BOWER, Lee : *October 15th, 1892.*

Eros (Platycis) minutus, F., in Gloucestershire.—I have to record the capture of a series of *Eros (Platycis) minutus* in Splatts' Wood, Gloucestershire. I took a small series on September 3rd, 1892, in an old stump of ash; most of them were found in the frass in the burrows of *Sinodendron cylindricum* which were on the stump; the ♂ and ♀ were also *in cop.* on the above date. On August 14th I found a magnificent specimen of *Acanthocinus ædilis*, ♂, in Bagley Wood, Oxford, on a fallen log of wood; I caught it as it was in the act of flying; as I have not been to the locality since, I have not found another. I kept it alive for nearly a month by feeding it upon sugar and ripe fruits. I have to record another ants' nest beetle, viz., *Cetonia aurata*; I found two cocoons in a nest of the wood-ant, and, on opening one, I found a specimen of *Cetonia aurata* in a perfect condition. The ants' nest was found on Shotover Hill, near Oxford.—JOHN W. SHIPP, University Museum, Oxford : *September, 1892.*

[In the list of myrmecophilous beetles given by Mr. E. W. Janson in the Entomologist's Annual for 1857, the larva of *Cetonia aurata* is mentioned as having occurred in nests of *Formica rufa*; the perfect insects have also been found on several occasions; I have not, however, seen a record of the discovery of the cocoon in the nests.—W. W. F.].

Adelops Wollastoni, Jans., at Broadstairs.—While staying at Broadstairs last July I found a single specimen of this beetle in a decaying stump, about a mile from the spot where I formerly met with it in such abundance. It seems to be generally distributed in the neighbourhood, as I have now met with it in three localities. Probably it would be taken much more generally if looked for in the right situations, i. e., in decaying seed potatoes underground.—THEODORE WOOD, Baldock, Herts. : *October 5th, 1892.*

Coleoptera near Wellington College in July.—Sweeping about 9 p.m. I took *Odontæus mobilicornis*, ♂, but whether from nettles, grass or birch I cannot tell, as it was too dark to examine my net before reaching home. Two specimens of the

same beetle occurred here a couple of years ago, and were then found half drowned in one of the College lakes. I have also taken this month two specimens of the unicolorous green variety of *Anomala Frischii*, both flying; and one specimen of *Cryptocephalus biguttatus* (Scop.), which I found clinging to a stem of dry grass.—E. F. ELTON, Wellington College, Berks.: *July 17th*, 1892.

Anthocomus terminatus, Mén., at Wicken.—When relaxing and mounting a small box of *Coleoptera* the other day from Wicken Fen, I came across two specimens of a beetle which I was very soon able to identify as *Anthocomus terminatus*. They were obtained with the rest by shaking bundles of dried reeds, &c., over a newspaper at Wicken Fen in June, 1888.—B. TOMLIN, Llandaff: *October*, 1892.

Chionaspis vaccinii, Bouché.—I collected this *Coccid* last August at Argentière, Haute Savoie, on the stems of *Vaccinium* in pine forests, and sent it to Mr. R. Newstead, of the Chester Museum, who kindly named it for me. The locality in which I found it is over 4000 feet above the sea. It is curious that Signoret, the original discoverer of the species, found all his specimens on the *leaves*, whereas mine invariably occurred on the *stems*. Mr. Newstead has kindly favoured me with a few notes, remarking that he knows of no record since the description of the species nearly twenty years ago. He finds, from the examination of several females, that they agree with Signoret's description (Essai, p. 130), except as to the arrangement of spinnerets, a slight discrepancy which may be due to the immaturity of the specimens.—ID.

A New Catalogue of Hemiptera.—The "Musée Royal d'Histoire Naturelle de Belgique" has in hand a "Catalogue générale des Hémiptères," compiled by M. Lethierry, of Lille, and M. Severin, Assistant in the Museum, which cannot fail to be of the greatest utility. We have seen the commencement of it. The plan adopted is that of Gemminger and Von Harold's Catalogue of *Coleoptera*.—EDS.

Reduvius personatus in a wasp's nest.—I have received from Mr. W. H. Tuck, of Bury St. Edmund's, various insects taken in bees' and wasps' nests; amongst them was a specimen of *Reduvius personatus*, which was obtained from a nest of *Vespa germanica*. The nest, Mr. Tuck writes, "was in a rat's hole near water, and was built upon the old domicile of the rats." I do not remember to have seen a record of the occurrence of *Reduvius* in such a situation; all I have taken have been in houses. Unfortunately there was nothing to show whether it was merely a casual visitor or a resident.—E. A. BUTLER, 39, Ashley Road, Crouch Hill, N.: *October*, 1892.

Brachypalpus bimaculatus, Mcq., and other rare *Diptera* in 1892.—Mr. Coryndon Matthews' note on this species is very interesting. In addition to the capture he mentions, Mr. Wainwright and I have each taken one this June at Sherwood Forest on hawthorn bloom. Among other rare *Diptera* taken by myself this season are—*Criorrhina ruficauda* (one), *floccosa* (common), *Xylophagus ater* (one), *Xiphura atrata*, *Pachyrrhina crocata* (common), at Sherwood Forest. *Merodon equestris*—of this fine species I was delighted to take two females and one male in my own garden. *Syrphus flavifrons*, *Platychirus latimanus*, *Didea alneti* (one), at

Sutton Park ; of this last named species Mr. Verrall informs me he has taken one in twenty-five years' collecting. *Limnobia bifasciata*, *Amalopsis littoralis*, *Conops quadrifasciatus* and *ceriiformis*, were taken freely at Wyre Forest. *Tipula vittata*—of this rare "daddy" between thirty and forty were taken during May in Sutton Park ; also a few *T. Diana*, *Pedicia rivosa* (commonly), and a magnificent series of *Pæcilostola punctata*, varying from pale grey to black forms.—R. C. BRADLEY, Sutton Coldfield, Warwickshire : October 4th, 1892.

Rare Hemiptera at Chobham and Surbiton.—During the past summer I have spent several weeks at each of the above places, and have been fortunate in finding many *Hemiptera* which, if not very rare, are local and worth recording.

At Chobham in July on elms I took both *Orthotylus viridinervis*, Kbm., and *ochrotrichus*, D. & S., pretty commonly, but was unable to find *Scotti*, Reut. ; on sallows I took *Plesiocoris rugicollis*, Fall., commonly, *Psallus albicinctus*, Kbm., one specimen, described in our last number, *Pediopsis cereus*, Germ., and *impurus*, Boh., *Idiocerus elegans*, Flor., rarely, *lituratus*, Fall., *confusus*, Flor., and *Aphrophora salicis*, De G. ; by sweeping in the evening on the Common, I found *Myrmus miriformis*, Fall., very commonly, developed and undeveloped, and of all shades of colour, from brown to apple-green, *Cymus melanocephalus*, Fieb., *Aphanus pini*, Linn., with the membrane almost colourless, *Capsus scutellaris*, Fab., one specimen of the black variety, *Systellonotus triguttatus*, Linn., freely, running amongst a colony of *Lasius niger*, on a hillock covered with *Hieracium pilosella*—the similarity existing between the ♀ *Systellonotus* and the ♀ *Lasius* is really extraordinary when the two are running about together ; *Amblytylus brevicollis*, Fieb., one specimen, *Allodapus rufescens*, Burm., on heather, but not abundantly, and only in the undeveloped form, *Doratura stylata*, Boh., common in damp places, *Athysanus melanopsis*, Hardy, scarce, *Deltocephalus repletus*, Fieb., in dry grassy localities, *Glyptocephalus proceps*, Kbm., one ♀, *Thamnotettix striatula*, Fall., and *Limotettix striola*, Fall., in damp places ; off poplars, by beating, I obtained *Idiocerus albicans*, Kbm., and *Psallus Rotermundi*, Scholz.

At Surbiton, in July and August, I captured off aspens, *Idiocerus populi*, Linn., and *albicans*, Kbm., *Pediopsis fuscineris*, Boh., and off the same species of tree on Esher Common, *Idiocerus tremulæ*, Estl., and *laminatus*, Flor. ; by sweeping on Esher Common I got a ♂ of the great rarity, *Liburnia Dalei*, Scott, a ♂ of *Glyptocephalus proceps*, Kbm., *Deltocephalus Argus*, Marsh., and *Thamnotettix cruentata*, Pz. ; off elms I got *Orthotylus ochrotrichus* commonly, but neither *viridinervis* nor *Scotti* appeared, *Anthocoris gallarum ulmi*, De G., rarely, and in only one locality, and *Orthotylus marginalis*, Reut., this species so common on willows and sallows I have never before taken on elm, but near Surbiton I found it so several times, and in localities where no *Salix* seemed to be near ; on *Achillea millefolium* I took *Macrocoleus tanacetii*, Fall., freely, but in one spot only ; *Megalocera longicornis*, Fall., also occurred in one small area on *Lolium perenne* ; *Atractotomus mali*, Mey., ♂ and ♀ by sweeping.—EDWARD SAUNDERS, St. Ann's, Woking : October 8th, 1892.

Mr. Albarda's Collection of Palæarctic Neuroptera.—It was with great regret I heard some time since from my valued friend and correspondent, Mr. H. Albarda, of Leeuwarden, that failing eyesight had caused him to abandon Entomology. His

rich and representative collection of Palæarctic *Neuroptera* was offered by him to the Leyden Museum, on condition that it be kept separate and not incorporated in the general collection, and the offer was eagerly accepted by the authorities. At the same time the Dutch Entomological Society received the donation of such books and pamphlets from his library as the Society did not already possess.—R. McLACHLAN, Lewisham, London: *October, 1892.*

Obituary.

John Thomas Harris, F.E.S., died of consumption at Burton-on-Trent, on October 3rd, aged 62. He was sub-manager of the Burton, Uttoxeter, and Ashbourne Union Bank, and was very much respected in the town and neighbourhood; for some time he had been in a delicate state of health, and, had he chosen, he might have retired on a substantial pension; he preferred, however, to go on working to the last, and was on duty at the Bank a week before his death. Mr. Harris was a very keen naturalist; botany was his chief pursuit in his earlier days, but the study of botany led up to the study of *Coleoptera*, and, of course, helped him largely in its pursuit; he had an excellent collection of British *Coleoptera*, and took many good things, among them the first specimens of *Macronychus quadrituberculatus*, *Seybaleus oblongiusculus*, and *Bagous diglyptus*, found in Britain, also *Aphthona nigriceps*, *Zeugophora flavicollis*, &c.; owing to ill health he did not do much during his latter years, which were much saddened by the death of both his wife and only child from the same complaint from which he himself died, but he still kept up his old interest.

Mr. Harris was very retiring, and few people knew much of him beyond his own immediate circle of friends, but it would be impossible to find a man of a more kindly or unselfish nature; the writer of this notice well remembers the pleasant times which he spent, when quite a beginner, in his room overlooking the Trent, going over his collection, and determining captures and localities, and rarely leaving without some good insects. He was elected a Member of the Entomological Society in 1886; he was one of the founders of the Burton-on-Trent Natural History and Archaeological Society, of which he was one of the earliest Presidents, and, as one of the Vice-Presidents, he continued to take an interest in its welfare as long as his health permitted him.—W. W. F.

Howard W. J. Vaughan, F.E.S., died on October 18th, at the early age of 46. He had been in bad health for some time, but we believe his death was somewhat unexpected. He was born at Hackney on April 18th, 1846, and was the son of a Patent Agent. After completing his education he was articled to a solicitor, and was admitted in 1869, when he established himself on his own account. Subsequently he entered into partnership with Mr. C. A. Briggs, and was a member of his firm at the time of his death. He was a keen Lepidopterist from boyhood. A note from his pen on *Colias Edusa* appeared in the last No. of Vol. x of the "Intelligencer" in September, 1861, and afterwards, until recently, he was a frequent contributor to Entomological literature. For a time he edited the entomological column of the journal known as "Young England." He was an ardent collector and keen observer. For a considerable time he occupied himself especially with *Phycidæ*, and an article by him on this subject appeared in Vol. vii of this

Magazine. The *Tortrices* also received a large share of his attention. Later on he took up variety collecting eagerly, and amassed one of the finest collections of British *Lepidoptera* that have been brought together. He was induced to sell his collection in 1890 (three days' sale at Stevens' Rooms), and it realized a large sum. The absence of his collection seemed to have a serious effect upon Vaughan, and although he continued to attend to Entomology in a somewhat desultory manner, he was never again the same man as formerly. As a youth he was a frequent visitor at Mr. Stainton's "at homes," and those who knew him at his best will remember a genial entomologist, with a large amount of humour and a wide knowledge of his subject. He joined the Entomological Society of London in 1869.

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: Oct. 10th, 1892.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Mr. J. T. Moore, A.L.S., was elected an Honorary Member; and Mr. J. H. Stott, of Newcastle, Staffs., an Ordinary Member of the Society.

Mr. S. L. Mosley, of Huddersfield, read a paper, entitled, "Vegetable galls and their makers." The author referred to the difficulty in breeding these insects, and spoke of the theory of the ancients, who, because they could not understand how a caterpillar could be inside a gall which had no opening, believed that the egg must have been deposited in the seed of the plant. He remarked on the scarcity of literature on the subject, and described and exhibited specimens of many of the galls and their makers, including some species new to Britain. The President exhibited a rich variety of *Epione apiciaria*. Mr. Newstead, an interesting case of *Ateucus sacer* and Egyptian *Scarabs*, which were beautifully carved with hieroglyphics. Mr. Arkle, *Heliothis armigera*, bred from imported tomatoes. Mr. Collins, some nice forms of *Acronycta leporina*. Mr. Gregson, series of *Agrotis Ashworthii*, *Polia nigrocincta*, and *Dianthæcia cæsia*, bred and captured by himself this year. Mr. Harker, two specimens of *Hadena satura* from Aberdeen. Mr. Jones, *Lepidoptera* captured in Ireland, including some fine Irish forms. Dr. Ellis, series of *Cassida sanguinolenta* and *Bembidium saxatile*. Mr. Newstead drew attention to a record of *Polyommatus bætica*, captured at Heswall by Master McFee, in 1886 or 1887, which had lately come under his notice.—F. N. PIERCE, Hon. Sec., 143, Smithdown Lane, Liverpool: October 15th, 1892.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: October 10th, 1892.—Mr. R. C. BRADLEY, Vice-President, in the Chair.

Mr. A. W. Walker, Ingleside, Harborne Road, Edgbaston, was elected a Member.

Mr. P. W. Abbott exhibited *Colias Edusa* from Wyre Forest, one specimen; *Triphæna subsequa* from Freshwater, Isle of Wight; and also *T. orbona* for comparison with it. Mr. G. W. Wynn, the following bred butterflies—*Vanessa Io*, series from Wyre Forest; *V. c-album*, Wyre Forest; *V. cardui* from Cannock Chase; also two bred *Notodonta chaonia* from Wyre Forest, a single specimen of *Sesia cynipiformis* from the same place, and one *Colias Edusa* from Meriden, near Coventry.

Mr. R. C. Bradley, nice series of *Philonicus albiceps* and *Thereva annulata*, both from Barmouth. Mr. W. Harrison, insects from Frankby, near Harborne, *Cidaria testata*, *Thyatira derasa*, &c. ; also from Wyre Forest, *Eucosmia undulata*, *Phorodesma bajularia* (1), &c. Mr. A. H. Martineau read a paper upon the Social Ants, in which he gave some account of the various species, and the most interesting facts in their life-histories, habits, &c. He showed nests of *Lasius niger*, *L. flavus*, and *Myrmica ruginodis*, with many individuals in each ; also mounted specimens of other species.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 August 28th, 1892.—RICHARD SOUTH, Esq., F.E.S., Vice-President, in the Chair.

Mr. Frohawk exhibited a fine bred series of *Colias Edusa*, Fb., all the females being tinged with green in the hind-wings, also a living larva of *Carterocephalus Palæmon*, Pall. ; Mr. Carrington said few entomologists had had the good fortune to see the larvæ of this species. Mr. Carpenter, a series of *Argynnis Paphia*, L., and var. *Valezina*, Esp., amongst the former was a beautiful variety of the male, the hind-wings taking the character of *Valezina* ; also a series of *Epinephile hyperanthus*, L., with lanceolate markings, and stated that he had taken some hundreds of the insect in the New Forest this year, but found no variation. Mr. Macmurdo, a series of *Bryophila perla*, Fb., and stated that the lichen on the wall from which they were taken varied considerably. Mr. Adkin said the variation appeared to him to arise from an increase in the size and tone of the darker markings, the whole of the specimens being of a form in which the ground-colour is white ; he thought that in some districts the ground-colour of the wing assumed a yellowish or buff tint. Mr. Turner, bred specimens of *Boarmia roboraria*, Schiff., and stated that he only successfully hibernated two larvæ, although they apparently did well till the early part of March. Mr. Adkin gave his experience of twenty-five larvæ sleeved on oak in his garden, and which he observed in due course attached themselves to the twigs for hibernation ; all went well till the middle of December, when the heavy gales dislodged them, and although they gradually regained their position, taking advantage of occasional mild days to do so, they did not appear to thrive afterwards, were restless, and did not take to their food well as the spring advanced, the result being that only two produced imagines. Mr. Turner's exhibit also included *Apamea ophiogramma*, Esp., and a bleached variety of *Epinephile Janira*, L., from Leigh Essex, and remarked that several specimens of this form had been taken in this locality within the last few years. Mr. Allbuury, a series of *Colias Edusa*, Fb., some remarkably fine specimens of the var. *Helice*, Hb., *Deiopeia pulchella*, L., also two bred varieties of *Vanessa urticæ*, L. Mr. Hussey showed a box of interesting varieties—*Lycæna bellargus*, Rott., and *Icarus*, Rott., with the spots on the under-side developed into broad streaks ; *Polyommatus Phlæas*, L., in which one specimen had only the central spot on the fore-wing, and another with the hind-wings of a dark fulvous-brown ; and also a banded specimen of *Argynnis Euphrosyne*, L. Mr. Hawes related his experience of collecting at Felixstowe and Folkestone during the middle of August, and reported the continued abundance of *Colias* and *Vanessæ*, whilst *Pieris rapæ* and *brassicæ* were by hundreds ; at Folkestone he stated it was painfully evident that *Edusa* and *Hyale* had been hunted down by the schoolboys who prowl about the Warren Hills at this time of the year from early morning till

late afternoon. Mr. South, on behalf of Mr. Burkell, exhibited two well executed coloured drawings of varieties of *Smerinthus tilia*, L. Mr. Adkin enquired if all the species of *Pieris* were well represented, as he had not seen *napi*; *Pieris brassicae* was, he observed, abundant, *rapae* not equally so, and *napi* exceedingly scarce. Mr. Tutt remarked that his son had met with the latter species freely quite recently, and Mr. South stated that he still had a pupa which had been in that stage for three months.

September 8th, 1892.—J. JENNER WEIR, Esq., F.L.S., Vice-President, in the Chair.

Mr. Mark Winkley exhibited a beautiful variety of *Catocala nupta*, L., with the hind-wings pale brown shot with purple. Mr. Frohawk, *Satyrus Semele*, L., bred from ova. Mr. Fenn, a long series of *Cidaria truncata*, Hufn., bred from female taken at Chattenden, and showing three distinct forms; also *Colias Edusa*, Fb., with a broad black band in a female specimen, and another with faint yellow dots on the band. Mr. Tugwell, a very nice series of *Spilosoma lubricipeda* Esp., with their Yorkshire parents, and which he stated had only been in pupa three weeks. Mr. H. Moore brought a box of grasshoppers collected in Spain. Mr. Carpenter, a specimen of *Sirex juvencus* taken in Belsize Park, N.W. Mr. J. Jenner Weir exhibited specimens of *Vanessa cardui*, L., which he had reared from larvæ collected in July last at Westgate, the chrysalids immediately after metamorphosis had been subjected to a temperature of 57° Fahr., and the result was the imagines were much darker than usual, this was brought about by the black occupying an extended area, and the row of fine spots on the under-wings being not only increased in size but often confluent; he also exhibited a specimen of *Epinephile Janira*, L., taken at Westgate, which had a well defined ocellus on the upper-side of the lower wing. Mr. Frohawk stated that he had never noticed an ocellus in the species on the lower wings before. Mr. Manger, a *longicorn* taken 50 miles at sea off Borneo, also *Vanessa cardui*, L., taken at sea 30 miles from Algiers, and a *Cicada* 25 miles off Point-de-Galle, Ceylon.

September 22nd, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. R. Adkin exhibited *Oxyptilus distans*, Zell., and *O. pilosellæ*, Zell., taken near Dover this summer; also, on behalf of Mrs. Hutchinson, of Leominster, a small collection of *Micro-Lepidoptera* from Cornwall, including *Diasemia literata*, Scop., and a remarkably brightly marked small form of *Herbula cespitalis*, Schiff., said to be exceedingly local. Mr. South, a variable series of *Grapholitha cinerana*, Haw., taken on the borders of Middlesex between Northwood and Rickmansworth, also *G. nisella*, Clerck, and the varieties *pavonana*, Don., *Bæberana*, Fab., and *rhombifasciana*, Haw.; two examples of *petrana*, Hüb., = *cuspidana*, Haw., a form which was generally considered to be a variety of *nisella*, were found with *cinerana*: as the basal patch of these specimens agreed with that of *cinerana*, he was inclined to think that *petrana* was a form of *cinerana* rather than of *nisella*. Mr. Fenn, a fine series of *Orgyia antiqua*, L., with dark forms. Mr. McArthur, the life-history of *Sesia scoliiformis*, Bork., from Rannoch, also *Hepialus humuli*, L., from the Shetlands, the whole of the series having the normal colours of the under-wings replaced by a deep grey. Mr. Frohawk referred to the small white spot on the red band which was generally thought to indicate the female of *Vanessa Atalanta*, but he

showed females with and without the white spot, and one male which also had this and other female characters. Mr. Barren, *Colias Edusa*, Fb., and *C. Hyale*, L., taken at Blean this year. Mr. Carpenter made some observations upon the abundance of the larvæ of *Vanessa Atalanta* on Streatham Common, and remarked upon the variation in size, some were full-fed, whilst others were quite small. A discussion then ensued as to the double-broodedness of this species, in which Messrs. Carpenter, Tutt, Fenn, Barrett, Carrington and Frohawk took part.—H. W. BARKER and A. SHORT, *Hon. Secs.*

ENTOMOLOGICAL SOCIETY OF LONDON: *October 5th*, 1892.—HENRY JOHN ELWES, Esq., F.L.S., Vice-President, in the Chair.

Mr. W. H. Yondale, F.R.M.S., of Cockermouth, was elected a Fellow.

Mr. C. O. Waterhouse exhibited a specimen of *Latridius nodifer* feeding on a fungus, *Trichosporium roseum*.

The Rev. A. E. Eaton sent for exhibition the male specimen of *Elenchus tenuicornis*, Kirby, taken by him on the 22nd August last, at Stoney Stoke, near Shepton Montague, Somerset, and described by him in the "Entomologist's Monthly Magazine," October, 1892, pp. 250—253. Mr. McLachlan stated that another specimen of this species had been caught about the same date in Claygate Lane, near Surbiton, by Mr. Edward Saunders, who discovered that it was parasitic on a Homopterous insect of the genus *Liburnia*, and had also described it in the Ent. Mo. Mag., pp. 249, 250.

Mr. J. M. Adye exhibited, for Mr. McRae, a large collection of *Colias Edusa*, *C. Edusa*, var. *Helice*, and *C. Hyale*, all taken in the course of five days' collecting in the neighbourhood of Bournemouth and Christchurch, Hants. There were twenty-six specimens of *Helice*, some of which were remarkable both in size and colour. He stated that Mr. McRae estimated the proportion of the variety *Helice* to the type of the female as one in fifty. Mr. Adye also exhibited two specimens of *Deiopeia pulchella*, recently taken near Christchurch. The Chairman, Mr. Hanbury, Mr. Jenner Weir, and Mr. Merrifield commented on the interesting nature of the exhibition, and on the recent extraordinary abundance of *C. Edusa* and the var. *Helice*, which was probably not exceeded in 1877.

Mr. Dallas Beeching exhibited four specimens of *Plusia moneta*, lately taken in the neighbourhood of Tunbridge Wells.

Mr. Gervase F. Mathew sent for exhibition two specimens of *Plusia moneta* and their cocoons, which were found at Frinsted, Kent, on the 3rd September last. It was stated that Mr. Mathew had found seven cocoons on the under-side of the leaves of monkshood, and that the imagos had already emerged from five of them.

Mr. Rye exhibited a specimen of *Zygæna filipendulæ*, var. *chrysanthemi*, and two varieties of *Arctia villica*, taken at Lancing, Sussex; also dwarf specimens of *Euchloë cardamines* from Wimbledon; a variety of *Thecla rubi* from Bournemouth, and varieties of *Coccinella ocellata* and *C. oblongoguttata* from Oxshott.

Mr. A. H. Jones exhibited specimens of *Argynnis Pales*, var. *Isis*, and var. *Arsilache*, the females of which showed a tendency to melanism, recently taken at Campfer, in the Upper Engadine; also melanic forms of *Erebia Melampus*, and a specimen of *Erebia Nerine*, taken at Bormio, at the foot of the Stelvio Pass.

Mr. Elwes exhibited specimens of typical *Erebia Melas*, taken by himself at

Campiglio, in the Western Tyrol, on the 25th July last, at an elevation of 7000 feet; also specimens of the same species from Hungary, Greece, and the Eastern and Central Pyrenees. He stated that the supposed absence of this species from the Alps, which had seemed to be such a curious fact in geographical distribution, had been first disproved by Mrs. Nicholl, who discovered it at Campiglio two years ago. He also exhibited fresh specimens of *Erebia Nerine*, taken on very hot rocks at Riva, on the lake of Garda, at an elevation of about 500 feet; also specimens of the same species, taken at the same time, at an elevation of about 5000 feet, in cool forest glades; and remarked that the great difference of elevation and climate did not appear to have produced any appreciable variation in this species. Mr. Elwes also showed a pair of *Dasydia tenebraria*, var. *Wockearia*, Stgr., from Campiglio, which appeared to him to be sufficiently constant and distinct from the typical form to be treated as a species.

Mr. G. T. Porritt exhibited two fine varieties of *Abraxas grossulariata*, bred by Mr. George Jackson during the past summer from York larvæ. Also, on behalf of Mr. T. Baxter, a curious *Noctua* taken on the sandhills at St. Anne's-on-Sea, on August 20th last, and concerning which a difference of opinion existed as to whether it was a melanic form of *Agrotis cursoria* or of *Caradrina cubicularis*. Also a small dark form of *Orgyia antiqua*, which had occurred in some numbers at Longridge, near Preston.

Mr. A. Eland Shaw exhibited a specimen of *Mecostethus grossus*, Linn., taken lately at Irstead, in the Norfolk-broad district. He stated that this was the first recorded capture of this species in Britain since 1884.

Mr. C. G. Barrett exhibited a specimen of *Syriethus alveus*, caught in Norfolk, about the year 1860, by the Rev. T. H. Marsh; a beautiful variety of *Argynnis Euphrosyne*, caught this year by Mr. Latter near Godalming; and a series of varieties of *Ennomos angularia*, bred from a female taken at Nunhead.

Mr. P. Crowley exhibited a specimen of *Zygæna filipendulæ*, var. *chrysanthemi*, taken last August at Riddlesdown, near Croydon, by Mr. Murton Holmes.

Lord Walsingham sent for exhibition several specimens of larvæ of *Sphinx pinastri* and *Aphomia sociella*, preserved by himself, which were intended for presentation to the British Museum. The larvæ of *pinastri* had been sent to him by Lord Rendlesham, who obtained them from ova laid by a female which he had captured in Suffolk last August.

Mr. de Nicéville communicated a paper, entitled, "On the Variation of some Indian *Euplæas* of the sub-genus *Stictoplæa*;" and Captain E. Y. Watson exhibited, on behalf of Mr. de Nicéville, the specimens referred to in this paper. Colonel Swinhoe, Mr. Hampson, Mr. Poulton, and the Chairman took part in the discussion which ensued.

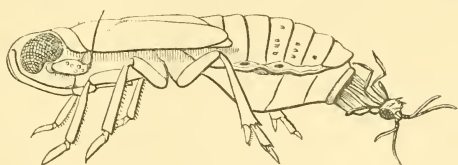
Mr. W. Bateson read a paper, entitled, "On the Variation in the Colours of Cocoons and Pupæ of *Lepidoptera*: further Experiments."

Mr. E. B. Poulton read a paper, entitled, "Further Experiments upon the Colour-relation between certain *Lepidoptera* and their surroundings."

Miss Lilian J. Gould read a paper, entitled, "Experiments on the Colour-relation between certain Lepidopterous larvæ and their surroundings, together with Observations on Lepidopterous larvæ." A long discussion ensued, in which Mr. Jenner Weir, Dr. Sharp, Mr. Merrifield, Mr. Poulton, Mr. Tutt, and the Chairman took part.—H. Goss, *Hon. Secretary*.

ELENCHUS TENUICORNIS, KIRBY, AND ITS HOST.

BY EDWARD SAUNDERS, F.L.S.



At page 249 *ante*, I gave an account of the capture of a specimen of *E. tenuicornis*, ♂, in the act of emerging from its host, an immature *Liburnia*. It was considered desirable to record at once so interesting a chapter in the life-history of this rare Strepsipterous insect, and there was not time to prepare an illustration. The above, much enlarged, figure has been drawn from the specimens (host and parasite) as captured.

St. Ann's, Woking :
November, 1892.

THE LIFE-HISTORY OF *LAMPRONIA CAPITELLA*.

BY T. A. CHAPMAN, M.D., F.E.S.

That portion of the life-history of this species that dates from the opening of the currant buds in spring to the appearance of the moth is well known ; the remainder, that I here propose to relate, does not appear to have been previously recorded. The larva in spring does occasionally so much damage by destroying the shoots of the red currant that it takes a position of economic importance to the fruit grower, and to this circumstance I am indebted for having been able to investigate the species, Mr. C. D. Wise, of Toddington, having kindly supplied me with abundance of full-grown larvæ last April. Mr. Charles Whitehead also supplied me with some material, and tells me that he also succeeded in observing the moth lay her eggs. I may reasonably hope that the further portion of the life of the moth that I have been able to trace may, in due time, suggest some means of resisting it as a pest, and so repay such kind assistance.

Certain moths, which I reared from the larvæ sent me, paired readily in captivity, and, supplying these with a spray of red currant, with berries rather more than half grown, I had the pleasure of seeing the moth lay eggs in such currants on several occasions. The moths were then sleeved out on growing currants, and here also they laid eggs, though I did not see it done.

The moth is probably the largest of our *Adelidæ*, if robustness

be considered rather than expanse of wing, and its knife for penetrating the currant is a very strong and powerful instrument, but constructed very similarly to those of *Adela* and *Eriocephala*. The moth sits upon the currant, and penetrates it in the lateral region; on one occasion the process occupied three or four minutes, on another only about thirty seconds. The dates were from 17th to 20th May. On examining one of these currants, which was rather more than half-grown, and with seeds still very soft, but about 1.75 mm. in diameter, two eggs of *capitella* were found lying free in the ovarian cavity, in another the cavity contained two such pairs of eggs, no doubt the result of separate acts of oviposition; I did not examine more, hoping to follow the history in the others I had, but in this I was disappointed, as I failed to keep them healthy long enough. I have little doubt, however, that two eggs are laid at each penetration, and that each pair of eggs was not the result of two separate layings; this chiefly because in each instance they lay side by side in a way that could not have resulted had the second egg been placed there by chance on a second laying. The ova are whitish, or nearly colourless, of ovoid shape, or, perhaps, more nearly that of a lemon, the narrow end being produced into a short neck or beak, giving a flask-like outline. The length is about 0.67 mm., and the diameter 0.33 mm.

I carefully watched the sleeved currants, and occasionally gathered one, but made out nothing till the last week in June, when, the majority of the currants being still quite green, some had a nearly ripe appearance, these proved to be those that were tenanted by *capitella*. In some of them the larva was still present, in others it had escaped, and in two instances I observed the escape of the larva. It usually escapes a short way from the summit, and leaves a very minute hole, and there is often near this a small blackened speck (cicatrix of oviposition?) on the skin of the currant, and some yellowish discoloration beneath, but each so slight as not to be observed without looking for.

The food of the larva whilst in the currant is the interior of one seed, and in eating this it leaves very little frass, which is of a pale yellow colour like the seed, and remains in the interior of the seed, so that practically no trace of the larva is discoverable up to the actual date of its leaving the currant. In some currants there was only one larva, but in one instance I found two, and this is at least not unusual, if I may judge from finding in other instances two seeds excavated, and two holes of emergence. In emerging the larva bores its way through the juicy parenchyma of the currant, a distance of more than its own length, yet comes out quite dry and clean, and no juice exudes

from the aperture of emergence; I found nothing to explain these convenient anomalies, except the unwettable character of the larva, and the elasticity of the currant skin. The buds and fruit spurs of the currant have at their bases many dead scales that persist from earlier buds, and amongst these the young larva buries and hides itself, spinning a small, firm, white cocoon, in which to pass the winter. Three larvæ, that were otherwise very distressed, on being offered a short branch of currant, at once adopted this course.

I have already remarked on the size and robustness of the moth; it is, then, remarkable that the young larva on retiring for hibernation is only 2 mm. in length, less than half the length of that of *rubiella*, when it retires for the winter (and, therefore, about one-tenth of it in bulk). It possesses well developed legs, but the prolegs, though fairly in evidence, possess no hooks; it is red in colour, much like *rubiella*, or a little paler when first escaping, rather orange-yellow; head rufous, with sundry hairs, spinneret very long; second segment has a plate arched behind, and narrowing to the front; along the hind margins are darker, stronger patches, in a central and two lateral portions, looking at first as if the plate consisted only of these in form of two lunules; anal plate pale, triangular, several hairs on each segment.

The full-grown larva has fairly developed prolegs, the four abdominal pairs with hooks, but the anal without. The hooks do not form a circle, but are rather disposed as an anterior and posterior row, on a line sloping outwards and backwards, but still so that they might be regarded as the anterior and posterior portions of a circle. The hooks vary a little in number, even on the two sides of the same segment, they are black and very minute, but distinctly hooked. On segment 7 (3rd abdominal) there are (usually) two anterior and five posterior hooks; on 8th, four anterior and five posterior; on 9th, two anterior and five posterior; on 10th, two anterior and four posterior; a third, pale, ill-developed hook often occurs with the two anterior hooks.

The pupa is of the ordinary *Adelid* type. The wing-cases extend to the middle or end of 10th segment, but are only attached as far as the 6th; the 7th, 8th, 9th, and 10th segments are free in the ♀ pupa, the 11th also in the ♂. Segments 7th—12th have each a row of spines along its forward dorsal margin, and 12th, 13th, and 14th have several other spines; the row of spines is also faintly indicated on 5th and 6th. Each segment carries trapezoidal, and also supra-, post-, and sub-spiracular hairs, the sub-spiracular being very long; there are also very long antennal hairs; there is no trace of posterior marginal spines, except two on segment 12th. Among the head appendages is the "eye collar," about which I have something to say elsewhere.

In emergence it forces itself out of cocoon, and the dehiscence is of the *Adelid* ("micro") type; segments 5th and 6th do not very distinctly open, as in *Tortrices*.

L. capitella is very scarce among my currants, indeed, for some years I doubted its presence: I was inclined to attribute this to the ground being dug every winter, destroying the hibernating larvæ therein, but this was obviously erroneous, as the larva certainly hibernates on the

bush. It so happens that we have a plague of birds that think nothing of clearing scores of currant and gooseberry trees of their fruit; I think it very likely that they begin this campaign by eating any early ripening currants that contain *capitella*, and so nearly exterminate it. This may be a remedy for *capitella*, but I think it is worse than the disease.

As to the generic position of *Lampronia capitella*. The life-history of *Eriocephala* (leaf mining *Micropteryx*) presents us with a larva that is legless, and mines in leaves during its whole (feeding) existence. *Incurvaria* (taking *muscalella* as type) mines the leaves as a young larva, and when half-grown forms a case and feeds up as a case-bearer. *Lampronia* (*rubiella* as type) feeds within a fruit as a young larva in autumn, in spring mines the shoots, it never makes a case, and in habit, and, to a great extent in appearance and structure, has made some advance towards *Tortrices*.

Now, *capitella* accords herein precisely with *rubiella*, and in no way with *muscalella*. In structure *capitella* is still nearer the *Tortrices* than *rubiella*, as the full grown larva has the abdominal prolegs armed with hooks imperfectly disposed in a circle. If the authorities allow, it is very desirable when *muscalella* and *capitella* are separated, that the name *Incurvaria* should adhere to *muscalella*; since, whatever reason Haworth may have had in framing the name, it is curious that *muscalella*, in ovipositing, so bends the abdominal extremity that it points not only downwards but forwards, so as to make the name *Incurvaria* very appropriate, as I have not met with a similar conformation in any other genus of the *Adelidæ*. I do not know that it has been formally propounded, but I assume that the knife-tail *Tineæ* that pierce the tissues of plants, and lay their eggs within fruits, the parenchyma of leaves, &c., must all be placed in one family, for which *Adelidæ* becomes the most appropriate name. I may note that this piercing oviposition was described about a dozen years ago by Prof. C. V. Riley, in the case of *Pronuba yuccasella*, which would thus appear to be an *Adelid*. He also makes some remarks on the pupa, which confirm this idea, and a copy of his figure of it shows it as distinctly *Adelid*; but I have not had the opportunity of seeing Riley's original paper.

The definite and interesting differences in the anatomy corresponding to these differences of habit may make the subject of a further communication.

Firbank, Hereford :

October, 1892.

NOTES ON *TRICHOPTERA* AND *NEUROPTERA* FROM IRELAND.

BY KENNETH J. MORTON.

During the first half of last August I collected in the neighbourhood of Glasslough in Co. Monaghan, Ireland, and I now record those species of *Trichoptera* which have not previously been taken in the locality, and also the dragon-flies and a few other *Neuroptera* which were observed. The weather was, on the whole, fine, and many caddis-flies were abundant; dragon-flies were also about in great numbers, but other families, such as *Chrysopidæ* and *Hemerobiidæ*, were hardly represented at all.

The *Trichoptera* new to the district are as follows:—*Limnophilus flavicornis*, Fab.; *L. xanthodes*, McLach., 3 ♀; *L. lunatus*, Curt.; *L. auricula*, Curt.; *L. hirsutus*, Pict., 1 ♀; *L. sparsus*, Curt.; *Leptocerus dissimilis*, Ste.; *Mytacidides nigra*, L.; *M. azurea*, L.; *Æcetis ochracea*, Curt.; *Psychomyia pusilla*, Fab.; *Agraylea multipunctata*, Curt.; *Hydroptila femoralis*, Eat.; *H. forcipata*, Eat.; and *Ithytrichia lamellaris*, Eat. Other interesting species, such as *Agrypnia Pagetana*, Curt., *Glyphotælius pellucidus*, Retz., *Limnophilus decipiens*, Kol., *Leptocerus fulvus*, Ramb., *Æcetis furva*, Ramb., *Tinodes maculicornis*, Pict., &c., were also taken.

Of dragon-flies *Sympetrum scoticum*, Don., swarmed on a bog; *S. striolatum*, Charp., was more generally distributed, but not so numerous. *Libellula quadrimaculata*, L., flew sparingly over the bog. *Æschna juncea*, L., common. *Æ. grandis*, L.: this fine insect was even commoner than *juncea*, and many examples of it were taken; while it came more conspicuously under notice during the hours of bright sunshine, when it might be seen chasing and capturing such large game as *Charæas graminis* and *Hydræcia nictitans*, it also followed its well known crepuscular habit, and one dull, warm evening I watched some examples carrying on their feeding operations along the shores of the lake until it was nearly dark. *Lestes sponsa*, Hans., this species was exceedingly common at both bog and lakes. *Ischnura elegans*, V. de Lind., also in great abundance. *Enallagma cyathigerum*, Charp., common. Another dragon-fly seen but not taken, was probably *Cordulegaster annulatus*.

Very few species belonging to the other Families of *Neuroptera* were collected. Amongst these may be mentioned *Sisyra fuscata*, Fab., which was swarming; and *Psocus longicornis*, Fab., and *P. nebulosus*, Ste.

ON TWO NEW AND SOME OTHER JAPANESE SPECIES OF
EPHEMERIDÆ.

BY THE REV. A. E. EATON, M.A., F.E.S.

The two new species described below were acquired by Mr. McLachlan from the collections formed by the late Mr. H. J. S. Pryer in Japan. With them were certain undescribed conditions of already known species, and also specimens belonging to the genera *Ephemerella*, *Chironetes*, *Iron*, *Heptagenia*, and *Ecdyurus*, mostly in the sub-imago stage, and it is, therefore, not desirable to give descriptions of them; they are here mentioned in connection with the generic distribution of *Ephemeridæ*.

EPHEMERA STRIGATA, *sp. nov.*

Imago (dried), ♂. Rather similar to the European *E. vulgata*. Wings transparent light brownish piceous-grey, with pitch-black neuration (or, where the nervures are most attenuated, pitch-brown), margined very narrowly with pitch-brown; fore-wing with a narrow transverse pitch-brown stripe, extending from the costa to the anterior branch of the pabrachial nervure, and emitting an acute projection about the middle into the axil of the fork of the præbrachial nervure; the sub-marginal area pitch-brown towards the base. Hind-wing narrowly tinted with pitch-brown along the terminal margin, and sometimes with a light pitch-brown spot in the middle on cross veinlets that meet the cubitus opposite the fork of the sector. Body pitch-brown; a stripe along each side of the pronotum, and in segments 1—6, or 7, of the abdomen a right-angled triangular spot pointing forwards on each side of the dorsum of the segment, pitch-black. Ventral segments striped obliquely with black from the posterior lateral angles to near the middle of the base. Fore-leg pitch-black, towards the base of the femur browner; trochanter and coxa light pitch-brown. Hinder-legs dull yellowish-amber colour. Setæ pitch-brown; the joinings slightly darker.

♀. Very similar; no spot in the hind-wing; fascia in the fore-wing almost broken up into spots; wing membrane only very faintly tinted.

Sub-imago. Not notably different from the imago, excepting in the dulness of the wing.

Length of body, ♂, 15—18 mm.; ♀, 20 mm.; wing, ♂, 17—19 mm.; ♀, 22 mm.; setæ, ♂ im., about 40 mm.; ♀, about 26 mm.; sub-im., ♂, about 17 mm.

Gifu, Nippon; April—May, 1886; 2 sub-im., 11 ♂ and 1 ♀ im.

DIPTEROMIMUS TIPULIFORMIS, McLach.

Sub-imago (dried), ♂. Wings uniformly light grey, with piceous neuration. Setæ 3, pitch-brown, sub-equal to one another.

Gifu, Nippon; ♂, 1 im., 1 sub-im.

SIPHILURUS BINOTATUS, *sp. nov.*

Imago (dried), ♂. Wings vitreous, with pitch-black neuration; opposite or adjoining the bulla of the sub-costa in the fore-wing, the few cross veinlets col-

lected together at the radius and bordered narrowly with pitch-brown, are apt to produce a small spot by the confluence of their bordering; the weaker of the nervures at the wing-roots, and the base of the costa, are light pitch-brown, and the neighbouring membrane only very slightly tinged with yellowish amber-grey; pterostigmatic region also very slightly tinted with pale sepia-grey. Body dull pitch-brown above; the apical borders of the abdominal segments, especially at the sides, darker, the darker colour extending thereabouts towards the base obliquely below a brown-ochreous space at the base of the segment; posterior lateral angles of the dorsum of the penultimate segment produced acuminate, somewhat as in *S. armatus*. Venter pitch-brown, with bright brown-ochreous joinings; the depressions in the neighbourhood of the genitalia also brown-ochreous or ferrugineous. Anterior tibiæ pitch-brown, the tarsi lighter; posterior legs and anterior femur rufopiceous or sub-ferrugineous.

♀. Very similar to the male.

Length of body, ♂, 16—17 mm.; wing, 17—19 mm.

Japan; 2 ♂ im., and many ♀ im.

BLEPTUS FASCIATUS, Etn.

Sub-imago (dried), ♀. Wings transparent light brownish-grey, marked as in the ♂ imago, with a darker tint of the same grey; marginal and sub-marginal areas in the fore-wing, together with the costa and the greater part of the next two nervures light reddish-brown, approaching light vandyke-brown.

Length of body, 12 mm.; wing, 18 mm.

Gifu, Nippon; April—May, 1886; 1 ♀ sub-im.

Shepton Montague, Castle Cary:
September, 1892.

DESCRIPTION OF A NEW SPECIES OF *RHIZOPHAGUS*.

BY W. G. BLATCH, F.E.S., AND A. C. HORNER, F.E.S.

RHIZOPHAGUS OBLONGICOLLIS, sp. n.

General appearance.—Of a ferruginous colour throughout, although the head and thorax are occasionally somewhat dusky or pitchy; it is more convex or cylindrical than the other species, except *R. nitidulus*, to which it most nearly approaches.

Head rather elongate, very slightly narrowed behind, scarcely as wide as thorax, uniformly punctured, the punctures being distinct but not close, scarcely if at all impressed on each side of forehead. Eyes rather small, and not very prominent. Antennæ ferruginous; 1st joint large, dilated on the inner side, 2nd subglobose, 3rd elongate, about $1\frac{1}{2}$ times as long as 2nd, 4th to 8th short, length and width about equal, 9th a little larger and slightly transverse, club ovate. Thorax oblong, parallel-sided, all angles completely rounded off, margined at sides and base, punctuation not close, a little stronger than that of head, a distinct but very small narrow space behind centre smooth, base gently emarginate. Scutellum with an impression at apex. Elytra elongate, narrowed behind, rather finely and closely punctured in regular rows, the sutural rows only being in evident striæ, punctuation at sides finer than on disc, interstices equal, flat, and finely alutaceous, the sutural

interstices only with a row of fine punctures in each. Legs ferruginous. Abdomen and under-side punctured, the last ventral segment without any depression.

Length, 4 mm., but varies somewhat.

Closely allied to *R. nitidulus*, but differing from that species in the following particulars:—colour different, head not so wide and with longer neck, eyes smaller and less distinctly prominent, antennæ with longer 3rd joint and club more ovate, thorax not narrowed behind and more strongly punctured, interstices of elytra less shiny, abdomen without any impression on last ventral segment.

Found under oak bark in Sherwood Forest in October, 1886, and June, 1889; also in Bagot's Park, Staffordshire, in June, 1892.

November, 1892.

PRACTICAL HINTS ON SUGARING.

BY W. HOLLAND.

It may not be generally known that moths often come more readily to sugar when it is applied to the twigs and branches of the trees they feed upon, or twigs of something near their food-plant, than they will to sugar placed on the trunks of trees. I have great success in this way. In districts where there are few trees, collectors know well how it pays to sugar flowers, bunches of grass, rushes, &c., but in well wooded places little else is attempted but sugaring the trunks of trees. Now, many species are very particular about the situation and condition of the tree trunk which is sugared for them. Trunks which are covered in by branches below are invariably neglected, those which stand fairly well out being best, but they must not stand out too boldly and bare or they offend in that way. I find in rows of trees which I have sugared for years that those which stand fair and clear, but just a little retiring, are the most favoured ones; if the trees are branched below, it is best to sugar the branches only. *Xanthia citrigo*, for instance, will hardly come at all to sugar put on the trunk of the lime tree; an occasional one only will be got in this way, but by sugaring below the tips of the outermost branches all round the tree I generally find about fifty on one tree, besides other species. In the case of *Xanthia aurago* again, the best place to sugar is along the outside of the beech wood beneath the ends of the overhanging branches, or on the twigs of the hedge below them. I have repeatedly taken about 100 in a night in this way, when trunks sugared inside and outside the wood have not yielded one specimen. Other things may be got in the same way by selecting the place according to the species wanted.

It is not well to sit down too readily and say sugaring is a failure. East and north-east winds are bad as every one knows, but if the wind is in any other quarter I trouble not about seeming bad times, for if moths will not come to sweets in one place they often will in another. I do not mean to say there are no bad times when the wind is away from the east, for there are times when the weather seems perfect and yet insects ignore sugar in an unaccountable manner. I do think, however, that these times are not so often as many suppose. We have a good all round sugaring place about three miles from this. I go there to sugar, say for *Noctua rhomboidea* when it is well due; if none or only few moths come after a fair trial, I do not waste time there, but go off further afield to another and another likely place, and pretty often find the right one. Then comes the conclusion: there were no broods of any consequence feeding in the old spot this year, but plenty in the new one, for, in my experience, moths will not come very far to the sugar, save only occasional stray ones. Again, if I find that the species I am after does not turn up well anywhere after a fair try round, I give that up as a failure for the year and just go off after something else. This autumn, for instance, I wanted *Xanthia gilvago*, so went and sugared the elms in a well-known place for them, but only a few odd ones came. A trial round at other elms told the same tale, so I can fairly conclude they are a failure for the season and go off to the beeches to look at *X. aurago*, when at once I find plenty of moths in such beauty and variety as should satisfy any one. This condition of things is continually occurring.

Another important thing in sugaring is to keep a sharp look out and recognise early what is going to be a species of the year, for every year brings some particular kind more plentifully than usual, and this is the time to follow it up, for you know not when you may see it so again.

I find it pays, too, in going to a distant sugaring ground to put on a little stuff in likely places along the way, just to look at in coming home, most of the moths are perhaps off when I return, but there are usually enough left to show what the place is producing just then, and often to let me into a secret.

To make the most of a species, the time at which it prefers to come to sugar must be noted. Some kinds come at once when it is dark, and are over on the second round to the trees or bushes; others come later; *N. rhomboidea* does not come with a rush, but keeps dropping on quietly for hours. With *aurago*, the bulk is obtained on the first and second round, but still they come steadily for a long time

after: *gilvago* has different ways; they come fairly well the first round or so, and then seem over for the night—but they are not; I have only got a third of my night's capture, after about 9 or 9.30 they come more in earnest, and I get the other two-thirds between then and midnight. *Catocala spona* and *promissa* come very early, but they come late also, and the special time for *nupta* is late.

The sugar I use is "Egyptian raw," a date sugar. This is very dark and strong stuff, sand-like, and free from lumps, and it mixes easily without boiling. I simply mix it with beer, and then add a drop or two of essence of pears just before starting out. No rum, there is rum enough in good sugar, and to add more is only to make the moths drop off before they can be bagged. "Jamaica foots" is a good sugar too, but it is lumpy and needs boiling. Old black treacle will do fairly well as a bait, but "golden syrup" I believe to be a fraud. Beetroot sugars, or refined sugars, are of course bad, and if I am somewhere where I can get only these, then, and then only, I add rum.

It is best not to have the sugar too thin, or it bespatters about so in applying to the twigs, and on the trunks it trickles down among the brambles or herbage below, and gives trouble. If the tricklings or droppings are not there, the moths come the more surely to where it is put on in convenient places.

Reading: November, 1892.

Note on the application of "sugar."—Much has been written as to the materials of which "sugar" should be made, and the relative materials of various recipes, but comparatively little of the materials to which it should be applied.

So far as my experience has gone, the following are unsuitable receptacles for the fragrant liquid, viz., stones, palings, posts, and dead trees. As a rule (to which, however, as to every generalization regarding sugaring, there are exceptions) insects will settle by preference on sugar otherwise placed. Again, where slugs and woodlice are plentiful, moths are usually scarce. The neighbourhood of dust or refuse heaps should be avoided. Open places are better than those closely shut in. *Per contra*, sugar on flowers I have usually found to be more attractive than that placed elsewhere; next after flowers I have found gorse bushes and the leafy twigs of young fir trees. Flowers and twigs are very troublesome to search, but they seem to be greatly preferred to tree trunks standing close by. I should like to hear something of the experience of others.

A Canadian entomologist told me that he used slices of apples suspended by string from branches, the apple slices being dipped in syrup every few days; by this bait he took many fine *Catocalæ* in the "Mountain" Park at Montreal, and said, in favour of the method, that the moths could be seen against the sky and bottled without using a lantern, a great advantage close to a great city.—G. B. LONGSTAFF, Twitchen, Morthoe: September 18th, 1892.

COCCIDS IN ANTS' NESTS.

BY W. W. SMITH.

In my paper "On the Origin of Ants' Nests" (p. 60 *ante*), I gave some account of the habits of *Ripersia formicicola*, Maskell, which I stated inhabits the nests of *Tetramorium striatum* and *T. nitidum* at Ashburton, New Zealand; I also stated that "a larger and a smaller species of *Tetramorium*" existed on the Ashburton river bed. After my paper was written I collected a good series of specimens of each species, and sent them to Professor Forel of Zurich. Before my consignment arrived, Forel had received specimens of *T. striatum* and *T. nitidum* from Mr. H. Suter of Christchurch, New Zealand, who collected them at The Hermitage, Mt. Cook. Both species were at once removed by Forel from the genus *Tetramorium*, where they had been placed by the late Frederick Smith (Trans. Ent. Soc., 1876, p. 481). The former now forms the type of Forel's new genus *Huberia*,* the latter he placed in Mayr's genus *Monomorium* (Comptes-rendus de la Société Entomologique de Belgique, séance du 7 Juin, 1890). The two new species from Ashburton were also assigned to the latter genus, and have recently been described and named by Forel.

When I wrote my paper I used Mr. Smith's generic name, and relied on his measurements in identifying the ants; I now, however, desire to state clearly that I have not so far observed the *Ripersiæ* in the nests of *Huberia striata*. They occur in the nests of *Monomorium Suteri*, Forel, *M. nitidum*, Smith, and *M. Smithii*, Forel. I am the more pleased to clearly explain these matters, as the relations of ants and *Coccids* are now receiving the well merited attention of entomologists. The mutual relations of ants and *Coccids* dwelling amicably together have recently been referred to by both Maskell and Douglas, and as this line of research is almost untouched, the remarks of these distinguished Homopterists should give a stimulus to those commencing the study of the interesting subject.

It has, of course, long been known to entomologists that several species of ants frequent *Coccid*-infested and honey-dewed trees and shrubs for the sweet secretions of these insects, but the mutual relations, or perhaps, the interdependence, of several species of both groups will be of extreme interest and importance when fully worked out.

Ashburton, New Zealand :

September 12th, 1892.

* Trans. New Zealand Institute, xxiv, p. 303.

Note on Tanyzonus bolitophilæ, p. 275.—Since publishing the description of this insect, I have learned from Mr. Cameron that he had previously described the ♀ in the Memoirs of the Manchester Lit. and Philos. Soc. (4th Ser., vol. ii, 1889) under the name of *Betyla fulva*. The names invented by me should therefore be displaced.—T. A. MARSHALL, Botusfleming Rectory, Cornwall: November, 1892.

Vanessa Egea ab. J-album, Esp., in November.—I obtained a specimen of *Van. Egea ab. J-album*, Esp., *ex larva*, on November 4th, from a caterpillar found on October 1st on *Parietaria officinalis* (pellitory). The larvæ, as I believe is generally known, can vary from blue to brownish in colour; my example was of the latter variety. Is this not a somewhat late period of the year at which to meet with the species? September is usually considered to be the latest month for its appearance.—F. BROMILOW, Avalon, St. Maurice, Nice, France: November 8th, 1892.

Note on Abraxas ulmata.—On October 29th, when at Hesleden Dene, near here, collecting *Lithocolletis* mines, I observed two larvæ of *Abraxas ulmata* crawling up a beech trunk; a little further on I saw another also upon a beech trunk; and shortly after other two upon another beech. It struck me at first as showing a great failing of instinct in the caterpillars, elm being, so far as my knowledge goes, the only tree they feed upon. Upon looking up, I, however, discovered that every leaf was off the elms, whilst the beeches were still clothed with leaves, though fast turning colour. The question, therefore, struck me—were they crawling up the trees to feed upon beech seeing that there were no elm leaves left to feed upon? It was a very windy afternoon, and they had probably been blown down with the last leaves; they were little more than half the size of full-fed larvæ.—J. GARDNER, 6, Friar Terrace, Hartlepool: November 7th, 1892.

Colias Edusa (Helice) bred.—As I can find no account of *C. Edusa* (var. *Helice*) being reared from the egg, I think it will interest readers to record that Mrs. Boley captured two specimens of this variety near the cliffs here; one of these laid a number of eggs, these hatched, and several of the larvæ were successfully reared to the chrysalis stage. Two fine females of the var. *Helice* emerged on September 27th and October 1st. Five or six males of the usual type also emerged, but the remaining nine or ten chrysalids died, probably from the effects of cold, as they were near an open window, and the weather suddenly became much colder.—W. A. LUFF, Guernsey: November 12th, 1892.

Micra parva in the Isle of Purbeck.—Among the *Macro-Lepidoptera* that fell to my share this year, the greatest prize was met with on June 8th, when I was working a saltmarsh on the edge of Poole Harbour. As I was walking slowly along the border of the marsh at about 6 p.m., a queer looking pale moth flew up from out of the rushes under my feet, and settled again three or four yards further on, and *within a foot* of the edge of the water! As there was a strong breeze blowing straight off shore across the harbour, I crept up cautiously (with my heart in my mouth) and held my net over the water behind the moth; then, on my bending down to try to box it as it sat, it flew up, and was carried by the wind safely into

the bottom of the net! *Micra parva* in a saltmarsh away from the coast line was hardly to be expected, but a look at it in its box convinced me that it must be either that species or *M. paula*, and a subsequent examination of the insect showed that it agreed well with the coloured figure of the former in the Ent. Ann. for 1859, and bore the special characteristics mentioned by Dr. H. Guard Knaggs in the Ent. Ann. for 1874 (pp. 156—8), as distinguishing *M. parva* from its near ally. The condition of the moth is not quite so good as one could wish, but it is natural to conclude that it, as well as the other rare *Lepidoptera* that occurred along the South Coast in the end of May and in June, was a visitor from the continent, and had come over to us with the vast flights of *C. Edusa*, *V. cardui*, and others that had undoubtedly crossed the channel, and arrived on our shores just at that same time.—EUSTACE R. BANKES, The Rectory, Corfe Castle : October 4th, 1892.

Vanessa Antiopa in the Isle of Purbeck.—It is a source of very great satisfaction to me to be able to record the occurrence of *V. Antiopa* in this neighbourhood during the past summer, and particularly so, as it is an addition to our list of Purbeck *Lepidoptera*. On June 1st, while Mr. Arthur W. Geffcken, who is H. M. Inspector of Drawing in schools for this district, was driving along the road from Swanage to Studland, between 1.30 and 2 p.m., he noticed a specimen flying along the road towards him, and when quite close it turned sharply to the left over some bushes in the hedge, giving him a capital view of its upper-side. I may mention that Mr. Geffcken is very well acquainted with the "Camberwell Beauty," having frequently met with it both in Europe and America, but he tells me that he has never before seen it in Britain.—ID.

Re-occurrence of Acrolepia marcidella in the Isle of Purbeck.—I have much pleasure in recording my *third* capture of this great rarity on the Purbeck coast, as I was fortunate enough to net a specimen on June 15th last while it was flying in the evening within a few yards of where the two previous ones were taken. It is certainly in finer condition than either of them, and differs somewhat from them in the pattern of its markings. Unfortunately the food-plant still remains a mystery, as our efforts to find traces of the larvæ have been altogether in vain.—C. R. DIGBY, Seale, Farnham : August 30th, 1892.

Plusia moneta.—It may interest some of our readers to know that the food-plant (*Aconitum napellus*) of this insect grows in the greatest profusion, and *apparently* wild, in Redlynch Park, Somersetshire, about four miles from Wincanton. Some idea of its abundance may be formed when I state that, when in flower, it is quite a feature in the landscape, and it occupies some parts of the park to the exclusion of everything else. In Hooker's Flora we read "native (?) in Wales, Hereford and Somerset." This latter citation may probably refer to the locality above-mentioned, and yet this is not precisely the sort of place any one who has seen the plant in the Alps, &c., would expect to find it in. *P. moneta* is pretty certainly a recent voluntary introduction to this country, and appears to be somewhat of a garden insect in the south-east, therefore, it is probable that any search for the insect, at present, in this Somersetshire locality would prove of no avail. But it is also most certainly spreading itself, and if it should get so far west as Redlynch Park it is likely to

thrive, supposing the winters to be not too bleak for it. I have seen much of the wild plant in the course of my alpine wanderings, but nowhere in such masses as in this West of England locality.—R. McLACHLAN, Lewisham: *November 1st*, 1892.

Is Tipula dispar, Hal., identical with *T. pagana*, Meig.?—I think not, as I can see the following points of difference:—

TIPULA DISPAR.

Abdomen longer and redder.
Wings a trifle broader.
Female with very short wings.
Does not occur before the middle of October, and goes on till November, and is common everywhere.

TIPULA PAGANA.

Abdomen shorter and browner.
Wings a trifle narrower.
Female with full-sized wings.
Occurs during September and the beginning of October on Dartmoor.

—C. W. DALE, Glanvilles Wootton: *October 17th*, 1892.

Capture of Amalopis straminea and occulta in Devon.—I met with these rare *Tipulidæ* at Horrabridge, on October 1st, inclusive of a female of the latter.—ID.

Psallus albicinctus, Kbm.—I described this species in the October number of this Magazine from the female specimen which I took at Chobham, but I find that I was not the first captor of it in this country. In 1890 Mr. W. Chaney sent me among other insects to name a small dark *Psallus* that puzzled me, and I returned it to him as *albicinctus*?. Unfortunately, although I remembered the specimen, I forgot the name of the sender, and it was not until I received some specimens the other day from Mr. Chaney that it occurred to me that it was he who had sent it to me. I at once wrote to him for the specimen, and find it is a very dark ♀ *albicinctus*. He tells me it was taken off oak in company with the commoner species, *varians* and *variabilis*. It is an unusually dark variety, very densely clothed with black hairs.—EDWARD SAUNDERS, St. Ann's, Woking: *November*, 1892.

Note on Cetonia floricola, Herbst.—With reference to Canon Fowler's note on *Cetonia aurata* in the last number of this Magazine, it may be of interest to mention that last year, when collecting at Rannoch, I found eight or nine pupæ of *Cetonia floricola* in the nests of *Formica rufa*, and this spring several specimens of this beetle emerged from them. There were also a number of the larvæ in the nests, which, on being exposed to the air, were at once seized by the ants, who tried to tear them to pieces, and I had some difficulty in securing any uninjured specimens.—R. W. LLOYD, St. Cuthberts, Thurleigh Road, Balham: *November 1st*, 1892.

Coleoptera at Ardara, Co. Donegal.—Ardara lies in the south-west of Donegal, and almost at the base of the promontory of Loughris. On either side of the promontory are tidal estuaries, each about six miles in length, and at the end of the northern one is Ardara. At the mouths of the estuaries are extensive sandhills, which were very good hunting grounds, but too far off to be availed of often. Inland are mountains covered with heather and bogs to their summits. Numerous streams ran down from these mountains, and there were several lakes in the neigh-

bourhood, the nearest, Killystewart Lough, being on the top of a hill about 300 feet above sea level. I was not able to work the locality as thoroughly as I should have wished, owing to both Mrs. Johnson and myself both being laid up with severe colds.

Among the insects taken were the following :—*Carabus clathratus*, a pair on the mountain among cut turf ; *C. catenulatus*, common among turf and heather on the mountain ; *C. granulatus*, a handsome form, brilliant green instead of the usual bronze colour. *Nebria Gyllenhalii*, plentiful on mountain under stones, &c., and I took one on the estuary shore. *Notiophilus aquaticus*, *N. palustris*. *Elaphrus cupreus*, *E. riparius*, both on the estuary shore, but quite scarce. *Pterostichus minor*, *Pt. gracilis*, *Pt. strenuus*, *Pt. nitens*, on mountain under stones and bits of turf, and pretty common. *Amara plebeia*, on estuary shore under stones and on mountain. *Anchomenus gracilipes*, one specimen on estuary shore under stones. *Bembidium atrocæruleum*, on estuary shore ; *B. pallidipenne*, on sandhills when looking for *Bledii* ; *B. Mannerheimi* ; I also got on the mountain a *Bembidium* which is near *B. Schuppeli*, but which Canon Fowler, to whom I referred, does not think is that species. *Trechus rubens*, one specimen on estuary shore. *Calathus micropterus* and *C. fuscus*, on sandhills. *Dyschirius politus*, on sandhills near *Bledius* burrows. I could only get two *Halipli*, viz., *H. ruficollis* and *H. lineatocollis*. *Hydroporus* was better represented, the chief being *H. lepidus* in great numbers in disused quarry ; *H. morio*, *H. nigrinus*, *H. obscurus* and *H. lituratus*. I had great hopes of getting *Dytiscus lapponicus*, but all my efforts were in vain, producing nothing but *D. marginalis*. *Rhantus exoletus*, not common. *Gyrinus minutus*, plentiful in mountain lakes. *Philhydrus melanocephalus*, in numbers in a boggy pool on mountain. *Homalota vestita*, *H. atramentaria*, *H. aterrima*, and *H. longicornis*. *Quedius cinctus* and *Q. tristis*. *Philonthus succicola*, plentiful on estuary shore in rejectamenta ; *Ph. agilis*, *Ph. quisquiliarius*, and *Ph. puella*. *Ocypus cupreus* and *O. morio*. *Bledius arenarius*, *B. pallipes*, the latter was far the most common, occurring in numbers, both were taken on the sandhills at mouth of south estuary. *Necrophorus ruspator* and var. *microcephalus* ; *N. mortuorum* in dead crow on mountain. *Anisotoma calcarata*, on sandhills. *Meligethes viduatus*, sweeping. *Coccinella 11-punctata*, very plentiful on sandhills. *Anomala Frischii*, several specimens dead on sandhills. *Aphodius lapponum*, the red var., *A. fatidus*, *A. depressus*, type form, and one with red elytra, all on estuary shore. *Athous niger*, in rectory grounds. *Cryptohypnus dermestoides*, on estuary shore. *Corymbites cupreus*. *Adrastus limbatus*. *Donacia sericea*, in Rectory grounds, by sweeping ; *D. discolor*, Panz. (comari, Suffr.) at Killystewart Lough. *Longitarsus suturalis* and *L. lævis*. *Apion Bohemani*, *A. vicie*, *A. cruentatum* on sandhills on *Trifolium* ; *A. loti*. *Atactogenus exaratus*, a rather large form and very white, on the sandhills. *Nanophyes lythri*, by sweeping, the last very plentiful on the purple loosestrife.—W. F. JOHNSON, Winder Terrace, Armagh : November 5th, 1892.

Stenophylax alpestris at Dunford Bridge, West Yorkshire.—I am very glad to now be able to confirm the supposed locality for *Stenophylax alpestris* (cf. Ent. Mo. Mag., xxvii, p. 249). On the 9th of July last, the Yorkshire Naturalists' Union visited Dunford Bridge, near Penistone, and some ten miles from Huddersfield, as one of the year's excursions, but unfortunately there was an incessant downpour of rain all the time the members could be out, and so little was done by any section.

I had been sheltering for a long time under a spreading beech tree in the wood close by Dunford Bridge railway station, and on coming from beneath the tree tapped one of the side branches with my stick, when out flew a Trichopteron, which was at once netted, and proved to be *Stenophylax alpestris*. A short time longer was spent in the rain among the dripping foliage, but no further specimen was seen, so far as I then knew. A few days ago, however, Mr. W. Mansbridge, of Horsforth, Leeds, who was one of the members attending the excursion, brought me a box of *Neuroptera*, &c., he had kindly pinned for me when collecting *Lepidoptera* in various localities, and among them was an *alpestris*, labelled "Dunford Bridge, July 9th." I was unable to visit the locality again until July 30th, when I could find no trace of the species, and it was evidently over. Probably the beginning of June to the middle of July will prove to be the right time for it.—GEO. T. PORRITT, Huddersfield: November 5th, 1892.

Reviews.

CATALOGUE OF EASTERN AND AUSTRALIAN LEPIDOPTERA-HETEROCERA, in the collection of the Oxford University Museum: by Col. C. SWINHÖE, F.L.S., &c. Part i, Sphinges and Bombyces: large 8vo, pp. 324, with eight chromo-litho. plates. Oxford: Clarendon Press, 1892.

This work was undertaken at the request of Prof. Westwood, and is a valuable addition to the systematic literature on Eastern and Australian Moths, more especially as hosts of Walker's types, principally from the eastern islands, are lying in the Oxford Museum. Colonel Swinhoe's reputation as an authority on eastern *Lepidoptera* is sufficient guarantee that the task he has undertaken will be well done.

Over 1400 species are enumerated, with full synonymy (a very valuable point). Of these, a certain proportion are new. As to the getting up we need say nothing, as the work is issued from the Clarendon Press. The plates indicate over 140 species, of which probably the majority are Walker's, drawn by Mr. F. C. Moore, whose experience in this line is very great. It is the first time, we think, that we have come across "veination" as a structural character, used in place of "venation," an innovation much to be deplored, and which, at first, we put down as a misprint. There are, however, several serious "misprints," which we are at a loss to account for, such as "Hearsay" for "Hearsey," and "Stoudinger" for "Staudinger," both of which are persistent, and therefore consistent. Namaqua Land (p. 23) is in South Africa, and outside the author's province.

VEGETABLE WASPS AND PLANT WORMS; a popular history of Entomogenous Fungi, or Fungi parasitic upon Insects: by M. C. COOKE, M.A., LL.D., A.L.S. Pp. 364, 8vo, with numerous illustrations. London: Society for Promoting Christian Knowledge, 1892.

We are sorry the Society under whose auspices this book is issued should have damaged a really important and valuable work by means of the catch-penny title indicated above by the words in capitals. We understand the author is not responsible for this, and intended that the sub-title should be used. The old colonists in New Zealand used to speak of the "Vegetable Caterpillar," but in ignorance of the

real state of the case, and we are inclined to sympathize with the author that, in these latter years of the nineteenth century, he should be made the means of perpetuating a long-exploded fallacy. The work is of great interest, as bringing together the majority of recorded cases of fungi parasitic upon insects, and from a botanical point of view we need scarcely say it is well done, for it would be difficult to find a higher authority than Dr. Cooke, who has devoted a lifetime to the study of fungi. That *all* the recorded cases are here included is impossible in the present state of the literature of the subject; as a botanist he has done his best, for many of these cases are recorded in purely entomological publications, which he can hardly be expected to have seen; but the omissions are certainly not many. In this country no attempt has been made to bring together the records of insect-fungi since the late Mr. G. R. Gray wrote his "Notices of Insects that are known to form the bases of fungoid parasites," in 1858: this work was privately printed, and is excessively scarce; it formed a 4to brochure of 22 pages, with six plates. Since that time the number of recorded cases have been very great, and we cordially recommend Dr. Cooke's work as indicating most of them.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *November 14th*, 1892.—Mr. R. C. BRADLEY, Vice-President, in the Chair.

The Secretary called the attention of the Society to the death of two of its Members, Messrs. J. T. Harris, of Burton-on-Trent, and Robert T. Allday, of Handsworth. These were the first losses by death the Society had experienced. The following were exhibited:—by Mr. W. Harrison, living larvæ of *Trochilium apiforme* from Arley; also one of the same preserved. Mr. C. J. Wainwright, the genus *Dioctria*, including *Reinhardi* from Wyre Forest, *rustipes* from Sherwood Forest and Sutton, and *Baumhaueri* from Sherwood Forest. Mr. R. C. Bradley, series of *Limnobia bifasciata* and *Amalopsis littoralis* from Wyre Forest.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *October 28th*, 1892.—Mr. A. M. Moss, President in the Chair.

Mr. J. Rickard was elected a Member of the Society.

The following exhibits were made:—Mr. Wells, a fine series of *Colias Edusa*, var. *Helice*, from Sidmouth, and some good varieties of *Smerinthus tiliæ*, bred from pupæ dug up at Cambridge. Mr. Farren, a long and varied series of *Xanthia aurago*, *Stauropus fagi* and the black variety from Reading, and *Callimorpha Hera* and its var. *lutescens* from Devon. Mr. Moss, a box of *Lepidoptera* from Windermere and neighbourhood; he said he had this year found the larvæ of *Cidaria reticulata*, taking twenty-seven in one afternoon; he exhibited a larva which he had preserved. Mr. Moss said they appeared to feed almost exclusively on the seed of their food-plant (wild balsam), entering the seed pod about the middle; in the day time they were to be found resting at full length along the midrib on the under-side of the leaves.—WILLIAM FARREN, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: Nov. 14th, 1892.—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

Mr. John Watson, 177, Moss Lane, East Manchester, was elected a Member of the Society.

The President referred to the death of Mr. J. T. Moore, who was one of the original Members of the Society. Mr. W. R. Scowcroft, of Manchester, read a paper, entitled, "Switzerland, a naturalist's paradise," in which he described a nine days' journey through Switzerland, and gave an account of the Lepidopterous and Coleopterous insects seen and captured, one of the most interesting being pale dimorphic forms of female *Colias Palæno*, similar to the var. *Helice* of *Colias Edusa*. In all seventy species of butterflies, fifty-nine species of moths, and forty species of *Coleoptera* were taken. The paper was illustrated by the specimens captured. The President exhibited a gynandromorphous specimen of *Halias prasinana*. Mr. Newstead, *Vedalia cardinalis*, which was imported into Alexandria in 1885 by Prof. Riley, of U. S. A., as a means of exterminating *Icerya ægyptiaca* (a Coccid injurious to orange trees), under the supervision of Admiral Bloomfield; also the specimen of *Polyommatus bætica*, captured at Heswall, by Master M'Fee in 1886 or 1887. Mr. Gregson, *Sesia scoliæformis* and *Æcophora grandis* from North Wales. Mr. Harker, a pale variety of *Triphæna orbona* with the transverse lines very strongly marked.—F. N. PIERCE, Hon. Sec., 143, Smithdown Lane, Liverpool.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: October 13th, 1892.—C. G. BARRETT, Esq., F.E.S., President, in the Chair.

Mr. James, of Uphill, Folkestone, was elected a Member.

Mr. Adye, on behalf of Mr. W. MacRae exhibited large numbers of *Colias Hyale*, L., *C. Edusa*, Fb., and var. *Helice*, Hb., a portion of the result of five days' collecting in the neighbourhood of Bournemouth and Christchurch. Mr. Adye expressed an opinion that the explanation of *Edusa* not occurring two years in succession was principally due to the ova, which he stated were always laid on the upper surface of clover blades, being destroyed by the grazing of sheep and cattle, and the action of mowing machinery. A discussion followed, and the Members taking part therein were of opinion that this explanation was entirely inadequate. Mr. Adye also exhibited two specimens of *Deiopeia pulchella*, L., from Christchurch. Mr. Henderson also showed a specimen of this species, taken by him at Hayling Island. Mr. Dennis, a variety of the under-side of *Lycæna bellargus*, Rott. Mr. B. W. Alkin, a series of *Epinephele Janira*, L., from Scilly, the ♀ having the orange blotch on the hind-wings. Mr. Fenn, *Lithosia muscerda*, Hufn., from Sandwich, a beautifully banded example of *Acidalia aversata*, L., and a box of examples of *Vanessa urtica*, L., picked from between four or five hundred, and showing very slight variation. Mr. Tugwell, a specimen of *Melanippe hastata*, L., with the usual central fascia reduced to a spot, varieties of *Colias Edusa*, Fb., and a pale series of *Hypsipetes ruberata*, Frr., from Hartlepool. Mr. C. G. Barrett, forms of *Polia chi*, L., from Sheffield, a dark variety of *Argynnis Euphrosyne*, L., taken by Mr. Oswald Latter at Godalming, and specimens of *Syrichthus alveus*, Hüb., taken by the Rev. Mr. Marsh in Norfolk, also dark specimens of *Ennomos angularia*, W. V., bred from ova obtained from a ♀ taken at Nunhead. Mr. Oldham, among others, dark

varieties of *Acidalia bisetata*, Bork., ♂ of *Odonestis potatoria*, L., of the colour of the ♀, *Nonagria cannae*, Och., and pupa case. Mr. Frohawk, a specimen of *Sesia sphegiformis*, Fb., and stem of alder, with pupa case projecting, and remarked that the day before the insect emerged the pupa broke through the bark and remained a short time in the sun, subsequently withdrew, and did not emerge until the following day. Mr. R. Adkin, a series of forms of *Vanessa c-album*, L.; he also exhibited a series of *Dianthæcia nana*, Rott., from the Scilly Isles, with examples from North Devon and the North of Ireland for comparison. It was pointed out that one of the specimens from Scilly closely resembled the supposed Irish *D. compta*, Fb.—H. W. BARKER and A. SHORT, *Hon. Secs.*

ENTOMOLOGICAL SOCIETY OF LONDON: November 2nd, 1892.—FREDERICK DUCANE GODMAN, Esq., F.R.S., President, in the Chair.

Mr. S. Stevens exhibited, for Mr. J. Harrison, of Barnsley, and read notes on, a beautiful series of *Arctia lubricipeda*, var. *radiata*, which had been bred by Mr. Harrison this year.

Mr. G. T. Bethune-Baker exhibited specimens of *Polyommatus dispar*, var. *rutilus*, taken in England by his father about sixty years ago. He stated that it was generally believed that this form of the species was confined to the Continent, but his specimens proved that it formerly occurred in England.

Mr. C. G. Barrett exhibited dark varieties of *Acronycta leporina*, bred by Mr. J. Collins, of Warrington; also a white variety of *Triphaena pronuba*, taken at Swansea by Mr. W. Holland.

Mr. M. Jacoby exhibited a specimen of *Sagra femorata*, from India, with differently sculptured elytra, one being rough and the other smooth.

Mr. J. A. Clark exhibited a long series of remarkable varieties of *Liparis monacha*, bred from a pair, one of which was from the New Forest and the other Continental. Several of the specimens were as light in colour as the typical form of the species; others were quite black; and others intermediate between these two extremes.

The Rev. Seymour St. John exhibited a monstrosity of *Abraxas grossulariata*, and a specimen of *Teniocampa stabilis*, with a distinct light band bordering the hind margin of the upper wings. He stated that he had bred both specimens.

Mr. E. B. Poulton exhibited two series of imagos of *Gnophos obscurata*, which had been subjected to dark and light surroundings respectively. The results were seen to be completely negative, the two series being equally light.

Mr. F. Merrifield showed a number of pupæ of *Pieris napi*. About eight of them, which had attached themselves to the leaves of the cabbage plant on which they were fed, were of a uniform bright green colour, with light yellowish edgings; of the others, those which had attached themselves to the black net covering the pot, or the brownish twigs which supported it, nearly seventy in number, were dark coloured, with dark spots and lines. The remainder were of a green colour, much less vivid than in those which had spun up on the leaves, with numerous dark spots and lines on them.

Mr. R. Adkin exhibited three bred female specimens of *Vanessa c-album*, two of which belonged to the first brood, and the third to the second brood. One of the

specimens of the first brood was remarkable in having the under-side of a very dark colour, identical with typical specimens of the second brood. He thought the peculiarity of colouring in this specimen had been caused by a retarded emergence from the pupa, due to low temperature and absence of sunshine.

Mr. F. W. Frohawk exhibited a series of striking varieties of *Satyrus hyperanthus*, bred from ova laid by a female taken in the New Forest in July last.

Mr. F. D. Godman exhibited a specimen of *Amphonyx Medon*, Cr., received from Jalapa, Mexico, having a pouch-like excrescence at the apex of its body. Mr. McLachlan, Mr. H. J. Elwes, and Mr. Poulton commented on it.

Mr. C. J. Gahan communicated a paper, entitled, "Additions to the Longicornia of Mexico and Central America, with notes on some previously recorded species."

Mr. W. L. Distant communicated a paper, entitled, "Contributions to a knowledge of the Homopterous family *Fulgoridæ*."

Mr. Oswald Latter read a paper (which was illustrated by the Society's new oxy-hydrogen lantern), entitled, "The Secretion of Potassium-Hydroxide by *Dicranura vinula*, and the emergence of the imago from the cocoon." The author stated that the imago produced, probably from the mouth, a solution of caustic potash for the purpose of softening the cocoon. The solution was obtained for analysis by causing the moths to perforate artificial cocoons made of filter-paper. Prof. Meldola said that the larva of *D. vinula* secretes strong formic acid, and Mr. Latter had now shown that the imago secretes potassium-hydroxide, a strong alkali. He said he had long been familiar with the fact that the secretion from the imago of *D. vinula* was alkaline to test-paper, but he had never investigated its composition; and he also stated that the fact that any animal secreted a strong caustic alkali was a new one. Mr. Merrifield, Mr. Hanbury, Mr. Gahan, Mr. Poulton, and Prof. Meldola continued the discussion.

Mr. H. J. Elwes and Mr. J. Edwards read a paper, also illustrated by the oxy-hydrogen lantern, entitled, "A revision of the genus *Ypthima*, principally founded on the form of the genitalia in the male sex." Mr. McLachlan said he attached great importance to the genitalia as structural characters in determining species, and he believed that he could name almost any species of European *Trichoptera* simply from an examination of the detached abdomens of the males. Mr. Osbert Salvin said he had examined the genitalia of a large number of *Hesperidæ*, with the view of considering their value in distinguishing species, but at present he had not matured his observations. Mr. Jacoby, Mr. Bethune-Baker, Colonel Swinhoe, Mr. Lewis, Dr. Sharp, Mr. Hampson, and Mr. Champion continued the discussion.

Mr. S. H. Scudder communicated a paper, entitled, "New light on the formation of the abdominal pouch in *Parnassius*." Mr. Elwes said he had based his classification of the species of this genus largely on the structure of this abdominal pouch in the female. Mr. Jenner Weir remarked that similar abdominal pouch was to be found in the genus *Acræa*; and Mr. Hampson referred to a male and female of *Parnassius* in Mr. Leech's collection, in which the pouch had come away from the female and was adhering to the male organs.—H. GOSS and W. W. FOWLER, *Hon. Secretaries*.

	PAGE		PAGE
Manders, Surg.-Capt. N., F.E.S.....	88, 130	Reuter, Dr. O. M.	159, 185
Marquand, E. D.	51	Rothney, G. A. J., F.E.S.	51
Marshall, Rev. T. A., M.A., F.E.S.	275, 308	Saunders, Edward, F.L.S.	8, 51, 66, 125, 161, 218, 249, 258, 290, 279, 310
Maskell, W. M., F.R.M.S., &c.	69, 183	Scott, R. H., M.A., F.R.S., &c.	264
Mason, P. B., F.L.S.	264	Sharp, David, M.A., M.D., F.R.S.	51, 52, 111, 212, 240
Matthews, Coryndon, F.E.S.	268	Shipp, John W.	288
Meade, R. H.	17, 35, 75, 93, 126, 150, 177, 210, 233, 259	Short, A.	167, 248, 295
Merrifield, F., F.E.S.	20	Smith, W. W.	60, 110, 307
Miller, J. C.	287	Still, Major J. N., F.E.S.	132, 147
Morgan, A. C. F., F.L.S.	12, 29	Theobald, F. V., B.A., F.E.S.	40
Morton, Kenneth J.	108, 194, 301	Tomlin, B.	289
Nevinson, B. G., M.A., F.Z.S.	33	Turner, D. P.	266
Newstead, B., F.E.S.	141	Verrall, G. H., F.E.S.	149
Nicholson, W. E., F.E.S.	270	Wainwright, C. J.	27, 33, 85, 113, 165, 195, 222, 248, 270, 293, 313
Oldfield, Geo. W., M.A., F.L.S.	266	Walker, James J., F.L.S.	55, 153, 197
Partridge, Lieut.-Col. C. E., F.E.S.	192, 265	Watkins, W.	162, 189
Pascoe, F. P., F.L.S.	230	Watts, C. W.	217
Perkins, R. C. L., M.A.	1	Webb, Sydney	190
Perkins, V. R., F.E.S.	135, 216	Weir, J. Jenner, F.L.S.	22
Pierce, F. N., F.E.S.	27, 54, 86, 113, 137, 166, 270, 292, 314	Wheeler, F. D., M.A., LL.D., &c.	203
Porritt, G. T., F.L.S.	47, 122, 227, 245, 255, 312	Wood, J. H., M.B.	117, 169, 225, 282
Prideaux, R. M.	49, 243	Wood, Rev. Theodore, F.E.S.	288

GENERAL INDEX.

	PAGE
Abraxas ulmata, Note on	308
Acrolepia marcidella, in the Isle of Purbeck, Re-occurrence of... ..	309
Adela viridella, Oviposition of	42
Adelops Wollastoni, Jans., at Broadstairs	288
Æschna borealis in the Schwarzwald: a correction	79
„ juncea in Surrey	268
Agrotis ravida in Wiltshire	246
Albarda's, Mr., Collection of Palæarctic Neuroptera	290
Aldeburgh, Lepidoptera at	254
Aleurodes quercûs, Sig.?	220
Aleurodidæ, A new genus and species of	29
Amalopsis straminea and occulta in Devon	310
Amphidasis betularia, var. Doubledayaria	48
Anchocelis litura, Curious food-plant of	47
Anisotomidæ at Woking	243
Annotated list of British Tachiniidæ 17, 35, 75, 93 126, 149, 177, 210, 233, 259	
Anthocharis cardamines, Early appearance of	133
Anthocomus terminatus, Mén., at Wicken	289
Anthocoridarum Madagascarienses: Species Capsidarum et	185
Ant-mimicking Hemipteron, On an Indian	107, 126

	iii.
	PAGE
Ants' nests, On the origin of	60, 307
<i>Aporia cratægi</i>	163, 190
<i>Arena Octavii</i> , Fauvel: a genus and species new to Britain	160
Armagh, Lepidoptera at	217
<i>Astata stigma</i>	23
<i>Bagous petro...</i>	81
Bayswater house, Entomology of a	230
Belytidæ, On a new genus and species of, from N. Zealand	275, 308
Blow Flies, On a toad killed by the larvæ of	9
<i>Boarmia repandata</i>	267
<i>Brachypalpus bimaculatus</i> , Mcq., in South Devon, 268; and other rare Diptera in 1892	289
Butterflies in the south-east of France, Notes on collecting	270
„, Notes concerning certain local British	44
„ of Rawal Pindi and the Murree Hills	88, 130
Butterfly notes	49
<i>Callimorpha Hera</i>	21
„, in South Devon...	280
„, not a Yorkshire insect	47
<i>Capsidarum et Anthocoridarum Madagascarienses</i> : Species	185
<i>Cathormiocerus maritimus</i> , Rye	51
<i>Cetonia floricola</i> , Herbst., Note on	310
Channel Islands, Neuroptera observed in the, in September, 1891	4, 72, 74
<i>Chionaspis vaccinii</i> , Bouché	289
Chobham and Surbiton, Rare Hemiptera at	290
<i>Chrysopa destructive</i> to Coccids in New South Wales, A	50
<i>Cicindela campestris</i> and <i>Halictus rubicundus</i>	161
Coccid notes, Further	221
Coccidæ, chiefly English, On new or little known, No. 2	141
„ in Ants' Nests	307
„, Jamaica	136
„, Migrations and new localities of some	69
„, Notes on some British and Exotic (No. 22), 105; (No. 23), 205; (No. 24)...	278
„, Observations on (No. 9)...	12
Coccids from Australia, A new <i>Icerya</i> and some other new	183
„ in New South Wales, A <i>Chrysopa destructive</i> to	50
Coleophoræ, Our rush-feeding	117, 169, 282
Coleoptera at Ardara, Co. Donegal, 310; from the New Forest, &c., 24; in the Hastings district in 1891, 192; in the North of Ireland, 134, 213, 311; in the Plymouth district, 23; near Wellington College in July, 288; taken at Loch Awe, N.B., in June, 1892, 216; taken in the New Forest in June, 1892	215
<i>Colias Edusa</i> , 216; Early occurrence of, in Guernsey and Sark, 191; in Glou- cestershire, 216, 217; on the Lancashire coast, 245; in Monmouthshire, 245; and <i>C. Hyale</i> at Surbiton, 245; and <i>C. Hyale</i> at Tonbridge, 246; and <i>C. Hyale</i> and <i>Vanessa Cardui</i> in the Channel Isles, 265; (<i>Helice</i>) bred, 308; in the Isle of Wight, 265; (<i>Helice</i>) near Plymouth, 266; (<i>Helice</i>) in Surrey, 266; (<i>Helice</i>) on the Kentish Coast, 266; at Rugby, 266; in North Devon, 266; (<i>Helice</i>) at Charmouth, 286; (<i>Helice</i>) in the Isle of Wight, 287; in Merionethshire, N. Wales	287

	PAGE
Colias Hyale and Edusa at Surbiton, 245 ; at Tonbridge, 246 ; (Helice) in Suffolk, 287 ; and Vanessa Cardui in the Channel Islands ..	265
Cryptocephalus bipunctatus (lineola), var. Thomsoni, Weise, at Woking ..	193
Ctenopseustis obliquana, Wlk., Notes on	110
Cynipidæ and Formicidæ, Synonymic notes on	67
„ „ A new species of... ..	176
Danima Banksiæ, Lewin, Notes on the larva of	232
Dasycampa rubiginea in the Isle of Portland	49
Deiopeia pulchella at Shorncliffe, 191 ; &c., in the Hastings district ...	267
Demas coryli	147
Diptera in 1891, Rare, 110 ; in 1892	268, 289
Ditula Woodiana, The larva of, feeds on Viscum album	225
Double-broodedness : whether influenced by the state of the food-plant ...	20
Drepanopteryx phalænoides	194
Dulichius Wroughtoni, Note on	107, 126
Early Hymenoptera and Hemiptera	135
East Sussex, A collecting expedition to ..	227
Elenchus tenuicornis, Kirby, parasitic on a Homopterous insect of the genus Liburnia... ..	249, 297
„ „ Kby., with illustration, Notes on	250
Epeolus productus, Thoms., and rufipes, Thoms.... ..	161
Ephemeriidæ, Japanese species of	302
Eristalis tenax in New Zealand ..	110
Eros (Platycis) minutus, F., in Gloucestershire, 288 ; (Pyropterus) affinis, &c., in the North of Scotland, 243 ; near Doncaster	267
Erotis baltica, McLach., in quantity	246
Ethiopian Rhynchota, Notes on	187, 237, 285
Eupithecia extensaria, Further notes on	122
Eustheninæ, A new genus of	158
Exorista apicalis	50
Fleas, Another addition to the British	66
Formica sanguinea at Shirley	50
Formicidæ, Synonymic notes on Cynipidæ and	67
France, Notes on collecting butterflies in the south-east of	270
Fremantle, Entomological notes from	55
Garden pests in 1892	191
Gelechia (Anacamptis) sparsiciliella, Barrett, not a distinct species ...	80
Gnorimus variabilis, L., Description of the larva of	242
Gossyparia ulmi	161
Guernsey, Addition to the list of Hemiptera-Heteroptera collected in ...	7
„ Neuroptera collected in the island of	72
Halictus cylindricus, ♂, Occurrence of, in April... ..	51
Harpalus obscurus, Fab., &c., at Swaffham Prior, Cambridge	215
Hastings district, Coleoptera in the, in 1891	192
Helopeltis, A new species of	159
Hemimerus talpoides, Wlk., Concerning	212
Hemiptera, A new catalogue of, 289 ; at Chobham and Surbiton, Rare, 290 ; -Heteroptera collected in the island of Guernsey, Additions to the, 7 ; Psallus albicinctus, Kbm., A new British species of, 258, 310 ; two new British	8

	v. PAGE
Hemipteron, On an Indian ant-mimicking	107
<i>Heptalus humuli</i> , Scent of the male	217
<i>Hercyna phrygialis</i> , Hüb., probably a British insect	264
<i>Hesperia lineola</i> in Nottinghamshire	267
Hibernated butterflies, Recent abundance of	189
Histeridæ, New species and one new genus of	102
<i>Homalomyia</i> , Two new English species of	149
<i>Homaloplia ruricola</i> , Black variety of	81
Homoptera at Woking and Chobham	218
Hope Professorship, The	194
<i>Hydroptila Maclachlani</i> , Klap., a caddis-fly new to Britain	108
<i>Hylemyia nigrescens</i> , Rud., destructive to carnations and picotees	135
<i>Icerya</i> , A new, and some other new Coccids from Australia	183
Ireland, Coleoptera in the north of, 134, 213; Trichoptera and Neuroptera from	301
Japanese species of Ephemeriidæ	302
<i>Lampronia capitella</i> , Life-history of	297
Larva of <i>Danima Banksiæ</i> , 232; <i>Ditula Woodiana</i> , 225; <i>Gnorimus variabilis</i> , 242; <i>Plusia gamma</i> , 255; <i>Swammerdamia apicella</i> (comptella), 257; <i>Vanessa cardui</i>	243
Late sugaring in the Lincoln district	133
<i>Lebia crux-minor</i> at Gomshall	267
Lepidoptera at Aldeburgh, 254; at Armagh, 217; in the Mourne district ...	217
<i>Leucania extranea</i> , Guer. (= <i>unipunctata</i> , Haw.), in the Isle of Purbeck ...	48
<i>Limnophilus decipiens</i> , Kol., in Ireland	110
Loch Awe, N.B., Coleoptera taken in June, 1892, at	216
<i>Locusta viridissima</i> near Charmouth	25
Lycenidæ from West Africa, Notes on some	184
„ „, Notes on the synonymy of several West African	65
<i>Meliana flammea</i> , &c.—Notes of the season	203
<i>Micra parva</i> in the Isle of Purbeck	308
Micro-Lepidoptera in 1891, Uncommon	79
Migrations and new localities of some Coccidæ	69
Moma Orion, Delay in emergence of	80
Mourne district, Lepidoptera in the	217
<i>Mutilla europæa</i> at Chobham	194
<i>Myrmedobia tenella</i> , Zett., and <i>distinguenda</i> , Reut.	51
<i>Myrmica ruginodis</i> making war on its own species	135
<i>Nacerdes melanura</i> in London, 80; note on	23
Neuroptera collected in the island of Guernsey, 72; from Ireland, 301; of the island of Sark, Additional notes on, 74; observed in the Channel Islands in September, 1891	4
„ „ Mr. Albarda's collection of palæarctic	290
New Forest, &c., Coleoptera from the, 24; taken in June, 1892, in the, 215; Proposed rifle range in the	220
<i>Noctua festiva</i> and its varieties, 47; <i>triangulum</i> at Lewisham	216
<i>Notodonta bicolora</i> , Capture of, in Devonshire	132
OBITUARY: Francis Archer, B.A., 112; Henry Walter Bates, F.R.S., 83; Professor H. C. C. Burmeister, Hon. F.E.S., 195, 221; Dr. Carl August Dohrn, Hon. F.E.S., 164; George Haggart, 112; John Thomas Harris, F.E.S., 291; Sir William Macleay, 26; L'Abbé Léon Provancher, 247; Howard W. J. Vaughan, F.E.S.	291

	PAGE
Odonestis potatoria in 1891, Late appearance of	80
Ecanthus pellucens not a British Insect	51
Onthophilus from Mexico, On a new	124
Orthezia urticæ, L., male	192, 219
Orthoytlus ochrotrichus, D. and S., Notes on	125
Osmia?, Nest of, in a rain-gauge	264
Pachetra leucophæa, On the rearing of, from the egg	45
Papilio Antimachus, female	162, 189
„ Podalirius in Sussex, Reported occurrence of	190
Parlatoria zizyphi	162
Pelobius tardus, Hbst., in Yorkshire	215
Pentaria badia, Rosenh., with description of a second species from the Pyrenées orientales, Note on	108
Phanæus, McLeay, Descriptions of three new species of the genus	33
Philopotamus montanus, Don., var. chrysopterus, Morton, in the west of England	182
Philydrus, Note on a doubtful British	111
Phorodesma smaragdaria, Substitute food for	47
Pieris Daplidice at Folkestone	265
„ napi, var. bryoniæ	22
Plusia gamma, Notes on a probably undescribed form of the larva of	255, 287
„ moneta, 309; at Shorncliffe	265
Plymouth district, Coleoptera in the	23
Pole System, The: notes on collecting Tortrices	97
Polyommatus Agestis, var. Artaxerxes, Variety of, with four white spots	245
„ dispar, var. rutilus, in England	190
„ Phlæas pupating under earth	49
Prices of British Lepidoptera	163
Psallus albicinctus, Kbm., a new British species of Hemiptera	258, 310
Pselaphidæ, Descriptions of two new, found by Mr. J. J. Walker in Australia and China	249
Pterophorus Lienigianus in North Kent and South Devon	288
Pulvinaria ribesiæ, Sign.	219
Raphidia, Introduction of, in N. Zealand and Australia	220
Rawal Pindi and the Murree Hills, The Butterflies of	88, 130
Reduvius personatus in a wasp's nest	289
REVIEWS: "Index to the known Fossil Insects of the World:" by S. H. Scudder, 25; "Catalogue Raisonné of Silk-producing Lepidoptera:" by A. Wailly, 25; "Devon Collembola and Thysanura:" by E. Parfitt, 25; "Journal of the Institute of Jamaica," Vol i, No. 1, 26; "Dis Käfer von Mitteleuropa, Band. i:" by Ludwig Ganglbauer, 52; "The Butterflies of North America:" by W. H. Edwards, 52; "An Elementary Manual of New Zealand Entomology:" by G. V. Hudson, F.E.S., 82; "The Lepidoptera of Dorsetshire," Second Edition: by C. W. Dale, F.E.S., 247; "Butterflies of the Riviera:" by Frank Bromilow, 268; "Directions for Collecting and Preserving Insects:" by C. V. Riley, 268; "Eastern and Australian Lepidoptera-Heterocera in Oxford Museum," part i: by Col. C. Swinhoe, F.L.S., 312; "Vegetable Wasps and Plant Worms:" by M. C. Cooke, M.A., &c....	312

Rhizophagus, Description of a new species of	...	...	...	...	...	303
Rhynchota, Notes on Ethiopian	...	...	...	...	187, 237, 285	
Rifle Range in the New Forest, Proposed	...	...	...	...	...	220
Ripersia Tomlinii, Newstead	...	...	...	...	...	219
Rush-feeding Coleophoræ, Our	...	...	...	...	117, 169, 282	
Sark, Additional notes on the Neuroptera of	...	...	...	...	...	74
Satyrus Semele in Woods	...	...	...	...	...	23
Scent of the male Hepialus humuli	...	...	...	...	...	217
SOCIETIES : Birmingham Entomological,	26, 53, 85, 113, 165, 195, 222, 247, 269, 292, 313					
Cambridge Entomological and Natural History	...	136, 223, 313				
Entomological Society of London,	27, 54, 87, 115, 138, 167, 196, 295, 315					
Lancashire and Cheshire Entomological,	27, 53, 86, 113, 136, 165, 270, 292, 314					
South London Entomological and Natural History,	54, 86, 114, 137, 166, 195, 224, 248, 293, 814					
South-East of France, Notes on collecting butterflies in the	...	...	...	...	...	270
Stauropus fagi, On the habits of	...	...	...	...	...	206
Stenophylax alpestris in West Yorkshire	...	...	...	...	...	311
Sternocelis, Note on, and on one new species	...	...	...	...	...	263
Stilicus fragilis at Shirley	...	...	...	...	...	160
Stylopidæ	...	...	...	...	1, 40, 50, 249, 250, 297	
Stylopidized Bees	...	...	...	...	...	1, 40
Sugaring, Practical hints on	...	...	...	...	...	304, 306
Surbiton, Rare Hemiptera at Chobham and	...	...	...	...	...	290
Swammerdamia apicella (comptella), Notes on the larva of	...	...	...	...	...	257
Sympetrum Fonscolombii in Surrey	...	...	...	...	...	193
Syrichthus alveus, Hüb., in England, Occurrence of	...	...	...	...	...	244
Tachiniidæ, Annotated list of British	...	17, 35, 75, 93, 126, 149, 177, 210			233, 259	
Tanyzonus bolitophilæ, Marshall, parasitic in the New Zealand glow-worm,						
Note on	...	...	...	...	...	277, 308
Tasmania, Entomological notes from	...	...	...	...	...	153, 197
Tipula dispar, Hal., identical with T. pagana, Mg. ? Is	...	...	...	...	...	309
Toad killed by the larvæ of blow-flies, On a	...	...	...	...	...	9
Tortrices, Note on collecting (the Pole System)	...	...	...	...	...	97
Trichoptera from Ireland	...	...	...	...	...	301
Vanessa Antiopa in the Isle of Purbeck, 309 ; cardui, Abundance of larvæ of,						
in South Devon, 243 ; Egea, ab. J-album, Esp., in November	...	...	...	...	...	308
West Africa, Notes on some Lycenidæ from	...	...	...	...	...	184
Woking and Chobham, Homoptera at	...	...	...	...	...	218
Xylophilus brevicornis, Per., a British Insect	...	...	...	...	...	68

SPECIAL INDEX.

COLEOPTERA.

	PAGE		PAGE
<i>Abdera triguttata</i>	243	<i>Eblisia cavipyga</i> (sp. n.), Lewis	102
<i>Acanthocinus ædilis</i>	288	<i>Elatér elongatulus</i> , 24; <i>nigrinus</i> , 216; <i>pomonæ</i> , 25, 216; <i>sanguinolentus</i>	25
<i>Acritus punctum</i>	24	<i>Elenchus tenuicornis</i> , 249, 250, 297; <i>Walkeri</i>	50
<i>Actobius signaticornis</i>	192	<i>Enhydrus Howitti</i>	197
<i>Adelops Wollastoni</i>	288	<i>Enneaphylus æneipennis</i>	201
<i>Adelotopus hæmorrhoidalis</i>	197	<i>Epuræa decemguttata</i> , <i>diffusa</i>	193
<i>Agabus arcticus</i> , <i>congener</i>	216	<i>Erirhinus æthiops</i>	216
<i>Agrilus sinuatus</i>	24	<i>Eros affinis</i> , 243, 267; <i>minutus</i>	288
<i>Amphirhoë decora</i>	201	<i>Eudranes carinatus</i> (sp. n.), Sharp	242
<i>Anchomenus gracilipes</i>	311	<i>Eulasinus Walkeri</i> (sp. n.), Sharp	240
<i>Anisotoma nigrita</i> , 243; <i>parvula</i> , 193; <i>Triepkei</i>	243	<i>Gnorimus variabilis</i> (larva)	242
<i>Anoplodera sexguttata</i>	25, 160, 216	<i>Gnypeta cœrulea</i>	160
<i>Anthaxia nitidula</i>	24	<i>Gyrinus minutus</i> , 311; <i>urinator</i>	193
<i>Anthicus bimaculatus</i>	24	<i>Halictophagus Curtisii</i>	50
<i>Anthocomus terminatus</i>	289	<i>Haliphus cinereus</i>	193
<i>Aphodius consputus</i> , <i>Zenkeri</i>	24	<i>Hallomenus humeralis</i>	243
<i>Arena Octavii</i>	160	<i>Harpalus obscurus</i> , <i>sabulicola</i> , 215; <i>servus</i> , <i>tardus</i> , 192; <i>tenebrosus</i>	24
<i>Asclera cœrulea</i> , 216; <i>sanguinicollis</i> ..	25, 216	<i>Hemimerus talpoides</i>	212
<i>Athous rhombeus</i>	25	<i>Hister robusticollis</i> (sp. n.), Lewis, 104; <i>stercorarius</i>	24
<i>Bagous claudicans</i> , <i>frit</i> , <i>petro</i>	81	<i>Homalium inflatum</i>	243
<i>Bembidium atrocaeruleum</i> , 311; <i>doris</i> , 134; <i>pallidipenne</i>	311	<i>Homaloplia ruricola</i> , <i>var.</i>	81
<i>Bledius pallipes</i>	311	<i>Hydnobius punctatissimus</i> , 24; <i>strigosus</i> ..	193
<i>Brachonyx indigena</i>	243	<i>Hydræna pulchella</i>	193
<i>Bythinus Curtisi</i>	193	<i>Hydroporus marginatus</i> , 24; <i>obscurus</i> ..	311
<i>Calosoma inquisitor</i>	24	<i>Lathridius rugosus</i>	243
<i>Carabus clathratus</i>	311	<i>Lebia chlorocephala</i> , <i>var. chrysocephala</i> , 286; <i>crux-minor</i>	267
<i>Cardiophorus asellus</i>	25	<i>Leptura sanguinolenta</i> , 243; <i>scutellata</i> ..	216
<i>Cathormiocerus maritimus</i>	51	<i>Lestignathus cursor</i>	197
<i>Cetonia floricola</i>	310	<i>Lynnæum nigropiceum</i>	192
<i>Conopalpus testaceus</i>	24, 25, 161, 216	<i>Megacronus cingulatus</i>	216
<i>Corymbites bipustulatus</i> , <i>metallicus</i>	216	<i>Melanotus puncto-lineatus</i>	24
<i>Cryphalus fagi</i>	193	<i>Melobasis gloriosa</i>	199
<i>Cryptarcha strigata</i>	24	<i>Molorchus umbellatarum</i>	215
<i>Cryptocephalus biguttatus</i> , 289; <i>bilinea-</i> <i>tus</i> , 193; <i>bipunctatus</i> , <i>v. Thomsoni</i> , 193; <i>moræi</i>	215	<i>Mycetophagus quadriguttatus</i>	161
<i>Cryptodus tasmanianus</i>	199	<i>Mycetoporus Reyi</i>	192
<i>Cryptophagus populi</i>	193	<i>Nacerdes melanura</i>	23, 80
<i>Cyrtotriplax bipustulata</i>	161	<i>Nitidula rufipes</i>	161
<i>Dasytes niger</i>	161	<i>Oberea oculata</i>	161
<i>Deronectes latus</i>	24	<i>Octhebius bicolon</i> , &c.	192
<i>Dichrochile Goryi</i>	197	<i>Odontæus mobilicornis</i>	288
<i>Dryocætes coryli</i>	161	<i>Outhophilus Julii</i> (sp. n.), Lewis	124
<i>Dyschirius extensus</i> , <i>impunctipennis</i> , 24; <i>politus</i>	311	<i>Opilo mollis</i> , 24; <i>6-notatus</i>	200
		<i>Osphyra bipunctata</i>	215

	PAGE
<i>Oxysternon McLeayi</i> (sp. n.), Nevinson, <i>pteroderum</i> (sp. n.), Nevinson.....	34
<i>Pachyta</i> 8-maculata	24
<i>Panagæus</i> 4-pustulatus.....	24
<i>Patrobis septentrionis</i>	216
<i>Pelobius tardus</i>	215
<i>Pentaria badia</i> , 108; <i>Oberthüri</i> (sp. n.), Champion	109
<i>Phanæus Flohri</i> (sp. n.), Nevinson.....	33
<i>Pharochilus politus</i>	198
<i>Philonthus puella</i>	311
<i>Philydrus coarctatus, suturalis</i>	111
<i>Platylister</i> (n. g.), Lewis	103
<i>Platysoma striatisternum</i> (sp. n.), Lewis..	103
<i>Plinthus caliginosus</i>	193
<i>Polydrusus chrysomela</i>	193
<i>Poophagus nasturtii</i>	24
<i>Potaminus substriatus</i>	193
<i>Prionus coriarius</i>	161
<i>Psammobius porcicollis</i>	24
<i>Pselaphus dresdensis</i>	134
<i>Pterostichus æthiops</i> , 23, 216; <i>dimidiatus</i> , 24; <i>vitreus</i>	311
<i>Quedius xanthopus</i>	243
<i>Rhizophagus oblongicollis</i> (sp. n.), Blatch and Horner	303
<i>Scydmanus exilis</i>	243
<i>Sipalia ruficollis</i> , 23; <i>testacea</i>	160
<i>Stenolophus elegans</i>	214
<i>Sternocelis viaticus</i> (sp. n.), Lewis	263
<i>Stilicus fragilis</i>	160
<i>Strangalia quadrifasciata</i>	24
<i>Stylops Dalii</i> , Kirby.....	50
<i>Tetratoma fungorum</i>	25, 80
<i>Tillus carus</i> , 200; <i>elongatus</i>	25
<i>Toxentes arcuatus</i>	201
<i>Trachodes hispidus</i>	193
<i>Trechus lapidosus</i> , 286; <i>rubens</i>	311
<i>Triarthron Märkeli</i>	243
<i>Trichius fasciatus</i>	243
<i>Xylita lævigata</i>	243
<i>Xylophilus brevicornis</i>	68
<i>Zeugophora Turneri</i>	243
<i>Zilora ferruginea</i>	243

DIPTERA.

<i>Amalopsis littoralis</i> , 290; <i>occulta</i> , <i>straminea</i>	310
<i>Baumhaueria marmorata</i>	178
<i>Brachycælia</i> (n. g.), Meade, <i>ocypeterina</i> ..	260
<i>Brachycoma devia</i> , 75; <i>smerinthi</i> (sp. n.), Meade	75

	PAGE
<i>Brachypalpus bimaculatus</i>	268, 289
<i>Chilosia maculata</i>	268
<i>Chironomus flexilis</i>	268
<i>Clista ænescens</i> , 234; <i>mærens</i>	233
<i>Clytia continua</i> , 78; <i>rotundiventris</i>	79
<i>Conops ceriiformis, quadrifasciatus</i>	290
<i>Cordylura ciliata</i>	110
<i>Criorrhina floccosa, ruficauda</i>	289
<i>Degeeria blanda</i> , 181; <i>collaris</i> , 180; <i>gran-</i> <i>dicornis</i> , 181; <i>muscaria</i> , 182; <i>pulchella</i> , 181; <i>pygmæa</i>	182
<i>Desvoidia</i> (n. g.), Meade, <i>fusca</i> (sp. n.), Meade	179
<i>Didea alneti</i>	289
<i>Dorops conopseus</i>	268
<i>Eristalis tenax</i>	110
<i>Exorista acronyctarum</i> , 18; <i>affinis</i> , 19; <i>albicans</i> , 17; <i>apicalis</i> , 18; <i>fauna</i> , 17; <i>grandis</i> , 19; <i>jucunda</i> , 20; <i>leucophæa</i> , 17; <i>lota</i> , 18; <i>noctuicida</i> , 19; <i>pertur-</i> <i>bans</i> , 17; <i>ruficauda</i>	18
<i>Fortisia fæda</i>	234
<i>Frontina læta</i> , 177; <i>nigricans</i>	178
<i>Glaphyoptera Winthemi</i>	110
<i>Helophilus lunulatus</i>	268
<i>Homalomyia corvina</i> , Kowartzi (spp. n.), Verrall	149
<i>Hylemyia nigrescens</i>	135
<i>Hypostena medorina, procera</i>	150
<i>Leptopeza flavipes</i>	268
<i>Leskia aurea</i>	95
<i>Leucostoma simplex</i>	236
<i>Limnobia bicolor</i> , 268; <i>bifasciata</i> , 290; <i>nigrina, pictipennis, pulchella, trimacu-</i> <i>lata</i>	268
<i>Löwia brevifrons</i>	261
<i>Macronychia agrestis</i>	93
<i>Masicera atropivora</i> , 128; <i>egens, juvenilis</i> , 129; <i>major</i> , 127; <i>myoidæa</i> , 128; <i>parva</i> , 129; <i>pratensis</i> , 128; <i>rutilla</i> , 130; <i>syl-</i> <i>vatica</i>	128
<i>Meigenia bisignata, floralis</i>	97
<i>Merodon equestris</i>	289
<i>Metopia amabilis</i> , 152; <i>argyrocephala</i> , 151; <i>campestris</i> , 152; <i>forficulæ</i> , 153; <i>leucocephala</i> , 151; <i>rubritarsis</i>	152
<i>Miltogramma conica</i> , 77; <i>punctata</i>	76
<i>Myobia fenestrata, inanis, longipes</i> , 94; <i>pacifica</i>	95
<i>Nephrotoma dorsalis</i>	268
<i>Pachyrrhina analis</i> , 268; <i>crocata</i> , 289; <i>scurra</i>	268

	PAGE
<i>Pedicia rivos</i>	290
<i>Phalacrocer</i> replicata	268
<i>Phorocera</i> assimilis, cæsifrons, 211; cili- peda, 212; concinnata, filipalpis, 210; unicolor	211
<i>Phorostoma</i> maritima	268
<i>Phyto melanocephala</i>	236
<i>Platychirus</i> latimanus	289
<i>Plesina</i> maculata	235
<i>Pæcilstola</i> punctata	290
<i>Ptychoptera</i> scutellaris	268
<i>Rhaphium</i> longicorne	268
<i>Rhinophora</i> atramentaria	234
<i>Rœselia</i> pallipes	96
<i>Scopolia</i> carbonaria, 259; lugens, 260; tricincta	259
<i>Syrphus</i> cinctus, 266; flavifrons	289
<i>Tachina</i> agilis, 39; angelicæ, brevipennis, 38; erucarum, 37; hortensis, 39; larva- rum, 36; latifrons, 37; morosa, 38; noctuarum, rustica, 37; tibialis	39
<i>Tipula</i> Diana, 110, 268, 290; dispar, 310; fascipennis, hortulana, nigra, 268; pa- gaver, 310; plumbea, 268; vittata	290
<i>Trixa</i> alpina, 78; œstroidea, 77; scutellata	78
<i>Typhlopsylla</i> pentactenus	66
<i>Xiphura</i> atrata	289
<i>Xylophagus</i> ater	289

HEMIPTERA.

<i>Aleurodes quercus</i> ?	220
<i>Aleurodicus</i> (n.g.), anonæ (sp.n.), Morgan, cocois	32
<i>Allodapus</i> rufescens	290
<i>Amblytylus</i> brevicollis	290
<i>Anthocoris</i> carinulatus (sp. n.), Reuter, 186; gallarum ulmi	290
<i>Aphanus</i> pini	290
<i>Aspidiotus</i> aurantii, budleia, camellia, cydonia, destructor, epidendri, nerii	70
<i>Athysanus</i> brevipennis, 218; melanopsis	290
<i>Atractotomus</i> mali	290
<i>Basicryptus</i> antennatus (sp. n.), Distant, elongatus (sp. n.), Distant	239
<i>Capsus</i> scutellaris	290
<i>Chionaspis</i> aspidastræ, 70; biclavis, 15; citri, 14, 70; eunymii, furfurus, salicis, 16; vaccinii	289
<i>Cicadula</i> punctifrons, 7-notata	218
<i>Cixius</i> Scotti, similis	218
<i>Corimelæna</i> scarabæoides	135, 268

	PAGE
<i>Cymus melanocephalus</i>	290
<i>Dactylopius</i> adonidum, calceolaria, cocotis, 71; poæ	61
<i>Deltocephalus</i> Argus, 218, 290; maculi- ceps, 290; oculatus, punctum, repletus, 218, 290	290
<i>Deræocoris</i> seticornis	286
<i>Diaspis</i> Boisduvalii, pinnulifera, rosæ ..	70
<i>Dicraneura</i> flavipennis, similis	218
<i>Dolycoris</i> Rutherfordi (sp. n.), Distant ..	107
<i>Dulichius</i> inflatus, Kirby, 126, = Wrough- toni, Bergroth	107
<i>Ennius</i> Monteironis (sp. n.), Distant	188
<i>Eriococcus</i> araucaria, 71; fraxini	147
<i>Eupteryx</i> abrotani, auratus, 219; collinus, melissæ, signatipennis	218
<i>Gargara</i> genistæ	218
<i>Glyptocephalus</i> proceps	290
<i>Gnathodus</i> punctatus	218
<i>Gossyparia</i> ulmi	161
<i>Helopeltis</i> Bergrothii (sp. n.), Reuter ..	159
<i>Icerya</i> Koebelei (sp. n.), Maskell, 183; Purchasi	71
<i>Idiocerus</i> albicans, confusus, 290; distin- guendus, 218; elegans, laminatus, litu- ratus, tremulae	290
<i>Lasiochilus</i> humeralis	186
<i>Lecanium</i> assimile (sp. n.), Newstead, 141; begonia (sp. n.), Douglas, 209; caprea, 278; coffea, depressum, hæmispheri- cum, hesperidum, hibernaculorum, lauri, maculatum, 71; minimum (sp. n.), Newstead, 141; mori, oleæ, ribis, rosa- rum, 71; rubi	105
<i>Ledra</i> aurita	218
<i>Leucaspis</i> pini	13
<i>Liburnia</i> brevipennis, 218; Dalei, 290; discolor, exigua, Fairmairei, leptosoma, mesomela, vittipennis, 218; stylopized, 249, 297	297
<i>Macrocoleus</i> tanacetii	290
<i>Mecomma</i> madagascariensis (sp.n.), Reuter ..	185
<i>Megalocera</i> longicornis	290
<i>Myrmedobia</i> distinguenda, 8, 51; tenella, 8, 51	
<i>Myrmus</i> miriformis	290
<i>Mytilaspis</i> citricola, Gloveri, pinnæformis, pomorum	70
<i>Nabis</i> boops	267
<i>Orthezia</i> urtica, ♂	192, 219
<i>Orthoschizops</i> plagosa (sp. n.), Distant ..	238
<i>Orthotylus</i> marginalis, ochrotrichus, viri- dinervis	290
<i>Ovengua</i> (n. g.), aperta (sp. n.), Distant ..	285

	PAGE
Parlatoria Proteus, 71; zizyphi	162
Philæus spumarius	192
Platytatus (n. g.) ambiguus, Bergroth ...	158
Pododus striatus (sp. n.), Distant	238
Prosopophora (n. g.) dendrobii (sp. n.), Douglas	207
Psallus albicinctus	258, 310
Pseudococcus socius (sp. n.), Newstead ...	144
Pulvinaria camellicola, 71; persicæ (sp. n.), Newstead, 142; ribesiæ	145, 219
Reduvius personatus	289
Ripersia formicicola, Maskell, 61, 307; fraxini, 147; pulveraria (sp. n.), New- stead, 145; Tomlinii (sp. n.), Newstead, 146, 219	
Signoretia luzulæ	142
Solenosthedium madagascariensis (sp. n.), Distant	187
Stiroma affinis. albomarginata	218
Systellonotus triguttatus	290
Tesseractoma æthiops, Afzelii, 189; Horni- mani, 188; indicta, nemorivaga	189
Thamnotettix cruentata	218, 290
Transvaalia flavescens (sp. n.), Distant ...	285
Trapezonotus Ullrichii	8
Typhlocyba aurovittata, cratægi, geome- trica, 219; rosæ	191
Uhleria Fioriniæ (camelliæ)	12, 71
Uhlunga (n. g.) typica (sp. n.), Distant...	237
Zygina flammigera, parvula, scutellaris...	219

HYMENOPTERA.

Andrena stylopized	1, 40
Audricus Foersteri, Hartigii	67
Astata stigma	23
Betyla fulva	308
Camponotus Mayri ..	67
Chrysis neglecta	215
Epeolus productus, rufipes	161
Formica sanguinea	50
Halictus cylindricus, ♂, 51; stylopized...	1
Holcponera	67
Huberia striata	307
Mutilla europæa	194
Myrmica ruginodis	135
Osmia pilicornis	135
Pediaspis acerinæ, aceris, sorbi	67
Pheidole Cameroni, monticola	67
Spathegaster punctatus (sp. n.), Bignell...	176
Tanyzonus (n. g.) bolitophilæ (sp. n.), Marshall	276, 308
Tetramorium nitidum, striatum	307

LEPIDOPTERA.

	PAGE
Abraxas ulmata	308
Acrolepia marcidella	309
Adela viridella	42
Agrotera nemoralis	229
Agrotis ravida	246
Amecera Schakra	91
Amphidasya betularia	48
Anacampsis sparsiciliella	80
Anchylopera lactana, 100; upupana ...	98, 100
Anchocelis litura	47
Anthocharis cardamines	49, 133
Aporia cratægi	163, 190
Arctia mendica	217
Argynnis Childreni, 91; Kamala, Latho- nia, 92; Niphe	91
Atella phalanta	91
Aulocera Padina, Saraswati, Swaha	91
Boarmia consortaria, 228; repandata	267
Botys lancealis	229
Callerebia Nirmala	91
Callinorpha Hera	21, 47, 280
Calocampa exoleta, vetusta	133
Capua flavillaceana	100
Carpocapsa grossana, 101; pomonana, 101, 155	
Catochrysops Cnejus	130
Catoptria Albersana	102
Chætoprocta odata	131
Chilo mucronellus	204
Chrysoclista binaculella	79
Chrysophanus dispar, v. rutilus, 190; Phlæas	49, 131
Coccyx cosmophorana, Ochsenheimeriana, pygmæana, subsequana	101
Coleophora adjunctella, 284; agrammella (sp. n.), Wood, 283; alticolella, 118, 120, 175; cæspititiella, 117, 118, 170, 175; glaucicolella (sp. n.), Wood, 118, 172; murinipennella, 117, 118, 169, 175; obtusella, 284; sylvaticella (sp. n.), Wood, 118, 175; tripoliella	255
Colias Edusa, 191, 216, 245, 265, 266, 286, 308; Fieldi, 132; Hyale... 132, 246, 265, 287	
Crambus falsellus, salinellus, uliginosellus	254
Ctenopseustis obliquana	110
Cyaniris cœlestina, Vardhana	92
Cymatophora fluctuosa, or	228
Cyrestis Thyodamas	92
Danais Chrysippus, Genutia, Liminæa ...	90
Danima Banksiæ	232
Dasyampa rubiginea	49

	PAGE		PAGE
<i>Deiopeia pulchella</i>	191, 265, 267	<i>Limnitis Trivena</i>	92
<i>Demas coryli</i>	147	<i>Liptena libentina</i> , <i>Mnestra</i> , <i>rubrica</i>	65
<i>Deudoryx cærulea</i> , 65; <i>Diyllus</i> , 185; <i>epi-</i> <i>jarbas</i> , 131; <i>obscurata</i>	65	<i>Lithosia aureola</i>	228
<i>Diplodoma marginepunctella</i>	255	<i>Lobesia servillana</i>	99, 100
<i>Ditula semifasciana</i> , 100; <i>Woodiana</i>	225	<i>Lobophora Sexalisata</i>	229
<i>Dodona Durga</i>	92	<i>Lucia aurifer</i>	157
<i>Doralia adusta</i>	157	<i>Lycæna Admetus</i> , 274; <i>Ariana</i> , 92; <i>Iolas</i> , 274; <i>Medon</i> , 92; <i>Meleager</i>	274
<i>Elachista cingillella</i>	80	<i>Macroglossa fuciformis</i>	229
<i>Emmelesia alchemillata</i>	218	<i>Melanargia Galathea</i>	274
<i>Epnuda nigra</i>	49	<i>Melanippe tristata</i>	217
<i>Erebia Neoridas</i> , 274; <i>Scipio</i>	273	<i>Melanitis Leda</i>	91
<i>Euspa Milionia</i>	131	<i>Meliana flammea</i>	203
<i>Eupithecia constrictata</i> , 218; <i>extensaria</i> , 122; <i>satyrata</i>	217	<i>Melitæa Athalia</i> , 44, 228; <i>Ciuxia</i>	44
<i>Euplœa Core</i>	132	<i>Micra parva</i>	309
<i>Eurymene dolobraria</i>	228	<i>Mixodia Schulziana</i>	217
<i>Euthalia Patala</i>	92	<i>Moma Orion</i>	80, 228
<i>Everes Ayiades</i>	130	<i>Myelois cribrum</i>	254
<i>Gelechia humeralis</i> , 254; <i>junctella</i> , 287; <i>pictella</i> , <i>obscorella</i> , 254; <i>osseella</i>	79	<i>Nacaduba Ardates</i>	130
<i>Gonepteryx rhamni</i>	132	<i>Neptis Astola</i> , <i>Ophiana</i>	91
<i>Grapholitha immundana</i> , 101; <i>minutana</i> , <i>nisella</i> , <i>obtusana</i>	100	<i>Noctua depuncta</i> , 246; <i>festiva</i> , 47; <i>trian-</i> <i>gulum</i>	216
<i>Hadena genistæ</i>	228	<i>Notodonta bicolora</i>	132
<i>Halonota nigricostana</i> , 99; <i>tetragonana</i>	101	<i>Odonestis potatoria</i>	80
<i>Hedya aceriana</i> , <i>lariciana</i> , <i>neglectana</i>	100	<i>Oecophora lambdella</i>	255
<i>Heliothis armiger</i>	59	<i>Pachetra leucophæa</i>	45
<i>Hepialus humuli</i>	217	<i>Papilio Alexanor</i> , 274; <i>Antimachus</i> , 162, 189; <i>Macleayanus</i> , 156; <i>Podalirius</i> , 190, 274	190, 274
<i>Hercyna phrygialis</i>	264	<i>Pararge Ægeria</i>	49
<i>Hesperia Actæon</i> , 50, 275; <i>lineola</i>	267, 275	<i>Penthina capreana</i> , 100; <i>picana</i>	99
<i>Heteronympha Merope</i>	59, 156	<i>Phorodesma smaragdaria</i>	47
<i>Hipparchia Parisatis</i>	91	<i>Pieris Daplidice</i> , 265; <i>napi</i> , 49; <i>v. bry-</i> <i>oniae</i> , 22; <i>teutonia</i>	55, 56
<i>Homœosoma binævella</i> , <i>nebulella</i>	254	<i>Pilodeudorix barbatus</i>	66
<i>Hypoliinnas Bolina</i>	91	<i>Plusia gamma</i> , 255, 287; <i>moneta</i>	265, 302
<i>Hypolycæna barbatus</i> , <i>debilis</i>	185	<i>Pœdisca occultana</i> , <i>ophthalmicana</i> , <i>Ratze-</i> <i>burghiana</i> , <i>rubiginosana</i>	101
<i>Ilerda Kasyapa</i> , <i>Sena</i> , <i>Syla</i> , <i>Tamu</i>	131	<i>Polyommatus Agestis</i> , <i>v. Artaxerxes</i> , 245; <i>Bœticus</i>	131
<i>Iolaus Alcibiades</i> , <i>Calisto</i> , <i>Julius</i> , <i>Julia-</i> <i>nus</i> , <i>Lekanion</i> , <i>Lukabas</i>	185	<i>Pseudaletis Agrippina</i> , <i>Clymenus</i> , <i>tricolor</i> , <i>zebra</i>	65
<i>Jarucus Theophrastus</i> , and <i>v. alteratus</i> ..	130	<i>Pseuderesia Zoraida</i>	65
<i>Junonia Asterie</i> , <i>Hierta</i> , <i>lemonias</i> , <i>Ory-</i> <i>thiya</i> , 91; <i>Vellida</i>	157	<i>Pterophorus Lienigianus</i>	288
<i>Kalliuna Inachis</i>	92	<i>Pyrameis Itea</i>	59, 157
<i>Kopelatus virgata</i>	66	<i>Rapala Nissa</i>	131
<i>Lampronia capitella</i>	297	<i>Retinia duplana</i> , <i>pinicolana</i> , <i>pinivorana</i> , <i>turionella</i>	101
<i>Leioptilus Lienigianus</i>	254, 288	<i>Satyrus Actæa</i> , <i>Briseis</i> , 275; <i>Circe</i> , 271, 275; <i>Fidia</i> , 275; <i>Janira</i> , 49; <i>Semele</i> , 23, 49	23, 49
<i>Leucania extranea</i> , 48; <i>pudorina</i>	204	<i>Scodionia belgaria</i>	217
<i>Lethe Dyrta</i>	88, 91		
<i>Leucophasia Duponcheli</i> , 274; <i>sinapis</i> ..	49		
<i>Libythea celtis</i> , 274; <i>Lepita</i>	92		
<i>Limacodes testudo</i>	229		

	PAGE
Scopelosoma satellitia	133
Selenia illustraria	21
Semasia obscurana, 99, 101; spiniana ..	101
Senta ulvæ	204
Sephisa dichroa	91
Simaëthis scintillulana	99
Spalgis latimarginata, lemolea, s-signata..	66
Spilonota pauperana	79
Spilothyrus alcea	271
Stauropus fagi	206
Steropes Paniscus	45
Stigmonota coniferana, 101; puncticos- tana, 99, 102; ravulana, 102; redimi- tana, 99, 101; roseticolana, Weirana...	101
Syrichthus alveus, 244, 275; carthami ...	275
Swammerdamia apicella	257
Tephrosia consonaria, 229; extersaria ...	228
Teriomima dispar, melissa	65
Thais medesicaste and v. Honoratii	273
Thecla pruni, 45; roboris.....	274
Tortrix Branderiana, 100; costana, v. lteriorana, 254; diversana, piceana, sor- biana	100
Vanessa Antiopa, 309; c-album, 92, 287; Canace, 92; cardui, 243; cashmirensis, 92; Egea, ab. J-album, 308; indica, 88, 92; xanthomelas	92
Xenica Klugii, 156; leprea	157
Xylina petrificata	49
Ypthima Nareda	91
Zephyrus Syla	131
Zizera Gaika, Maha, Otis	92
Zygæna lonicera	217

NEUROPTERA.

	PAGE
Æschna borealis, 79; juncea	268, 308
Bleptus fasciatus	304
Cæcilius Dalii.....	73
Chrysopa Ramburii	50
Diplectrona felix	5, 6, 72
Dipteromimus tipuliformis	332
Drepanopteryx phalænoides	194
Ephemera lineata, 74; strigata (spp. n.), Eaton	302
Erotesis baltica	246
Hydroptila MacLachlani	108
Limnophilus decipiens, 110, 301; xan- thodes	301
Micropterna lateralis.....	230
(Ecetis furva	301
Philopotamus insularis, 5, 72, 74; monta- nus, var. cesareus, 6; var. chrysopterus	182
Plectrocnemia geniculata.....	5, 72
Psocus quadrimaculatus	73
Rhyacophila munda, 74; septentrionis ...	5, 6, 73
Siphylurus binotatus (sp. n.), Eaton.....	302
Stenophylax alpestris.....	312
Sympetrum Fonscolombii	194
Tinodes assimilis, 6, 72, 230; maculicornis	301

ORTHOPTERA.

Locusta viridissima	51
(Ecanthus pellucens	25

LIST OF NEW GENERA AND SPECIES, &c., DESCRIBED
IN THIS VOLUME.

COLEOPTERA.

GENERA.	PAGE
EUDRANES, Sharp.....	241
EULASINUS, „	240
PLATYLISTER, Lewis	103
SPECIES.	
Eblisia cavipyga, Lewis, Burmah	102
Eudranes carinatus, Sharp, N. W. Australia	242
Eulasinus Walkeri, „ Chusan Archipelago	240

	PAGE
Hister robusticollis, Lewis, Natal ...	104
Onthophilus Julii, „ Mexico	124
Oxystemon MacLeayi, Nevinson, Amazons	34
pteroderum, „ Monte Video	34
Pentaria Oberthüri, Champion, Pyrenees	109
Phanæus Flohri, Nevinson, Mexico	33
Platysoma striatisternum, Lewis, Borneo	103
Rhizophagus oblongicollis, Blatch & Horner, England	303
Sternocælis viaticus, „ Algeria	263

DIPTERA.

GENERA.	PAGE
BRACHYCÆLIA, <i>Meade</i>	260
DESVOIDIA, ,, ...	179
SPECIES.	
Brachycoma smerinthis, <i>Meade, England</i> ..	75
Desvoidia fusca, ,, ,, ..	179
Homalomyia corvina, <i>Verr.</i> , ,, ..	149
<i>Kowartzi</i> , ,, ,, .	149

HEMIPTERA.

GENERA.	
ALEURODICUS, <i>Douglas</i>	32
OVENGUA, <i>Distant</i>	285
PLATYTATUS, <i>Bergroth</i>	158
PROSOPOPHORA, <i>Douglas</i>	207
UHLUNGA, <i>Distant</i>	237
SPECIES.	
Aleurodicus anonæ, <i>Morgan, Demerara</i> ...	32
Anthocoris carinulatus, <i>Reuter</i> , <i>Madagascar</i>	186
Basicyrtus antennatus, elongatus, <i>Distant, E. Africa</i>	239
Dolycoris Rutherfordi, ,, <i>Old Calabar</i>	188
Dulichius Wroughtoni, <i>Bergroth, India</i> ..	107
= <i>Formicoris inflatus, Kirby</i> ...	126
Ennius Monteironis, <i>Distant</i> , <i>Delagoa Bay</i>	188
Helopeltis Bergrothii, <i>Reuter, Gaboon</i> ...	159
Icerya Koebelei, <i>Maskell, Australia</i>	183
Lecanium assimile, <i>Newstead, England</i> ...	141
<i>begoniæ, Douglas, Demerara</i> ..	209
<i>minimum, Newstead, ——— ?</i>	141
Mecomma madagascariensis, <i>Reuter</i> , <i>Madagascar</i>	185

	PAGE
Ovengua aperta, <i>Distant, Old Calabar</i> ...	285
Orthoschizops plagosa, ,, <i>S. Africa</i>	238
Platytatus ambiguus, <i>Bergroth</i> , <i>Madagascar</i>	159
Pododus striatus, <i>Distant, S. Africa</i>	238
Prosopophora dendrobii, <i>Douglas</i> , <i>Demerara</i>	207
Pseudococcus socius, <i>Newstead, England</i>	144
Pulvinaria persicæ, ,, ,,	142
Ripersia pulveraria, ,, ,,	145
<i>Tomlinii</i> , ,, ,,	146
Solenosthedium madagascariensis, <i>Distant, Madagascar</i>	187
Transvaalia flavescens, ,, <i>Transvaal</i> ...	285
Uhlunga typica, ,, <i>Natal</i>	237

HYMENOPTERA.

GENERA.	
TANYZONUS, <i>Marshall</i>	276
SPECIES.	
Spathegaster punctatus, <i>Bignell, England</i>	176
Tanyzonus bolitophilæ, <i>Marshall</i> , <i>New Zealand</i>	276
= <i>Betyla fulva, Cam.</i>	308

LEPIDOPTERA.

Coleophora agrammella, <i>Wood, England</i> ..	118
<i>glaucoilella</i> , ,, ,,	118, 172
<i>sylvaticella</i> , ,, ,,	283

NEUROPTERA.

Ephemera strigata, <i>Eaton, Japan</i>	301
Siphylurus binotatus, ,, ,, ...	301

ADDITIONS TO THE BRITISH INSECT FAUNA BROUGHT FORWARD IN THIS VOLUME.

COLEOPTERA.

	PAGE
Arena Octavii, <i>Fauvel</i>	160
Rhizophagus oblongicollis, <i>Blatch and Horner</i>	303
Xylophilus brevicornis, <i>Perris</i>	68

DIPTERA.

Brachycoma devia, <i>Fln.</i>	75
<i>smerinthis, Meade</i>	75

	PAGE
Clista ænescens, <i>Zett.</i>	234
<i>marceus, Mgn.</i>	233
Clytia rotundiventris, <i>Fln.</i>	79
Degeeria blanda, ,, ...	180
<i>muscaria</i> , ,, ...	182
<i>pulchella, Mgn.</i>	181
<i>pygmæa, Mcq.</i>	181
Desvoidia fusca, <i>Meade</i>	179
Exorista acronyctarum, <i>Mcq.</i>	18

	PAGE
<i>Exorista apicalis</i> , <i>Mgn.</i>	18
<i>grandis</i> , <i>Zett.</i>	19
<i>jucunda</i> , <i>Mgn.</i>	35
<i>lencophaea</i> , „	17
<i>noctuidica</i> , <i>Rnd.</i>	19
<i>perturbans</i> , <i>Zett.</i>	17
<i>ruficauda</i> , „	18
<i>Fortisia fæda</i> , <i>Wdm.</i>	234
<i>Frontina nigricans</i> , <i>Egg.</i>	177
<i>Homalomyia corvina</i> , <i>Verr.</i>	149
<i>Kowartzi</i> , „	149
<i>Hypostena medorina</i> , <i>Schnr.</i>	150
<i>procera</i> , <i>Mgn.</i>	150
<i>Leskia aurea</i> , <i>Fln.</i>	95
<i>Löwia brevifrons</i> , <i>Rnd.</i>	261
<i>Macronyctia agrestis</i> , <i>Fln.</i>	93
<i>Masicera egens</i> , <i>Egg.</i>	129
<i>juvenilis</i> , <i>Rnd.</i>	129
<i>major</i> , <i>Mcq.</i>	127
<i>myoidæa</i> , <i>Dsv.</i>	128
<i>parva</i> , <i>Mcq.</i>	129
<i>pratensis</i> , <i>Mgn.</i>	128
<i>rutila</i> , „	130
<i>sylvatica</i> , <i>Fln.</i>	128
<i>Meigenia bisignata</i> , <i>Wdm.</i>	97
<i>floralis</i> , <i>Mgn.</i>	97
<i>Metopia argyrocephala</i> , <i>Mgn.</i>	151
<i>rubritarsis</i> , <i>Zett.</i>	152
<i>Myobia fenestrata</i> , <i>Mgn.</i> ..	94
<i>Phorocera cæsifrons</i> , <i>Mcq.</i>	211
<i>cilipeda</i> , <i>Rnd.</i>	212
<i>filipalpis</i> , „	210
<i>unicolor</i> , <i>Fln.</i>	211
<i>Phyto melanocephala</i> , <i>Mgn.</i>	236
<i>nigra</i> , <i>Dsv.</i>	236
<i>Scopolia lugens</i> , <i>Mgn.</i>	260
<i>tricincta</i> , <i>Rnd.</i>	259
<i>Tachina angelicæ</i> , <i>Mgn.</i>	38
<i>brevipennis</i> , „	38

	PAGE
<i>Tachina erucarum</i> , <i>Rnd.</i>	27
<i>hortensis</i> , <i>Mgn.</i>	39
<i>latifrons</i> , <i>Rnd.</i>	37
<i>noctuarum</i> , „	37
<i>rustica</i> , <i>Fln.</i>	37
<i>Trixa alpina</i> , <i>Mgn.</i>	78
<i>œstroidea</i> , <i>Dsv.</i>	77
<i>Typhlopsylla pentactenus</i> , <i>Kol.</i>	66

HEMIPTERA.

<i>Chionaspis furfurus</i> , <i>Fitch</i>	16
<i>Lecanium assimile</i> , <i>Newstead</i>	141
<i>rubi</i> , <i>Schrank</i>	105
<i>Myrmedobia distinguenda</i> , <i>Reuter</i>	8, 51
<i>Psallus albicinctus</i> , <i>Kirschbaum</i>	258, 310
<i>Pseudococcus socius</i> , <i>Newstead</i>	144
<i>Pulvinaria persicæ</i> , „	142
<i>Ripersia pulveraria</i> , „	145
<i>Tomlinii</i> , „	219
<i>Signoretia luzulæ</i> , <i>Signoret</i>	142
<i>Trapezonotus Ullrichii</i> , <i>Fieber</i>	8

HYMENOPTERA.

<i>Spathegaster punctatus</i> , <i>Bignell</i>	176
--	-----

LEPIDOPTERA.

<i>Syrichthus alveus</i> , <i>Hüb.</i>	244
? <i>Hercyna phrygialis</i> , „	264
<i>Coleophora agrammella</i> , <i>Wood</i>	283
<i>alticolella</i> , <i>Zell.</i>	118
<i>glaucoilella</i> , <i>Wood</i>	118
<i>sylvaticella</i> , „	118

NEUROPTERA.

<i>Hydroptila Maclachlani</i> , <i>Klap.</i>	108
--	-----

EXPLANATION OF PLATES.

Plate i—see page 33.

„ ii— „ „ 147.

„ iii— „ „ 209.

„ iv— „ „ 176.

„ v— „ „ 189.

Second Series, No. 25.]
[No. 332.]

JANUARY, 1892.

[PRICE 6d.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.
G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.
J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.
H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON :

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,
Supplies Entomologists with every Requisite
OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
Bottle of Killing Fluid, 9d
Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
Mahogany Pocket Box, with glass to slide in groove, 4/6
Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
Exchange Lists, 1d. (Postage, 1½d.)
Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
Setting and Drying House, complete, 10/6, 12/6, and 15/6
Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
The Entomologist's Store and Setting House, containing every requisite, £3
Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
Pupa Diggers, 2/ and 3/ Beating Tray, 15/
Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
Breeding Cage, 2/6; with Two Compartments, 5/
The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.
 Yearly Subscription 28/- Half-Yearly 14/6 Quarterly 7/6

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a *popular* and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH.

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of what is varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

Second Series, No. 26.] FEBRUARY, 1892.

[No. 333.]

[PRICE 6d.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON.

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,
Supplies Entomologists with every Requisite

OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND CO., Bedford Street, Strand, W.C.

Second Series, No. 27.]
[No. 334.]

MARCH, 1892.

[PRICE 6d.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.
G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.
J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.
H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON :

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite

OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
Bottle of Killing Fluid, 9d
Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
Mahogany Pocket Box, with glass to slide in groove, 4/6
Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
Exchange Lists, 1d. (Postage, 1½d.)
Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
Setting and Drying House, complete, 10/6, 12/6, and 15/6
Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
The Entomologist's Store and Setting House, containing every requisite, £3
Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
Pupa Diggers, 2/ and 3/ Beating Tray, 15/
Corked Store Boxes, best make, 2/6, 3/6, 4/6, 5/6, & 6/ Ditto, covered in Green Cloth,
Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
Breeding Cage, 2/6; with Two Compartments, 5/
The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
The New Sugaring Lantern, burns Benzoline, 5/6, 6/6, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

Second Series, No. 28.]
[No. 335.]

APRIL, 1892.

[PRICE 6d.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

H. T. STAINTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J’engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST’S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,

56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a *popular* and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

Second Series, No. 30.]
[No. 337.]

JUNE, 1892.

[PRICE 6d.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.
G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.
J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.
H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J’engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST’S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite
OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
Bottle of Killing Fluid, 9d
Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
Mahogany Pocket Box, with glass to slide in groove, 4/6
Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
Exchange Lists, 1d. (Postage, 1½d.)
Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
Setting and Drying House, complete, 10/6, 12/6, and 15/6
Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
The Entomologist's Store and Setting House, containing every requisite, £3
Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
Pupa Diggers, 2/ and 3/ Beating Tray, 15/
Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
Breeding Cage, 2/6; with Two Compartments, 5/
The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: **MACMILLAN AND Co., Bedford Street, Strand, W.C.**

Second Series, No. 31.]
[No. 388.]

JULY, 1892.

[PRICE 6d.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

H. T. STANTON, F.R.S.

—
SECOND SERIES—VOL. III 1892

[VOL. XXVIII.]

—◆—
“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

—◆—
LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite

OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
Bottle of Killing Fluid, 9d
Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
Mahogany Pocket Box, with glass to slide in groove, 4/6
Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
Exchange Lists, 1d. (Postage, 1½d.)
Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
Setting and Drying House, complete, 10/6, 12/6, and 15/6
Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
The Entomologist's Store and Setting House, containing every requisite, £3
Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 2/6
Pupa Diggers, 2/ and 3/ Beating Tray, 15/
Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
Breeding Cage, 2/6; with Two Compartments, 5/
The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

Second Series, No. 32.]
[No. 339.]

AUGUST, 1892.

[PRICE 6d.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.
G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.
J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.
H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,
56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite
OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
Bottle of Killing Fluid, 9d
Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
Mahogany Pocket Box, with glass to slide in groove, 4/6
Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
Exchange Lists, 1d. (Postage, 1½d.)
Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
Setting and Drying House, complete, 10/6, 12/6, and 15/6
Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
The Entomologist's Store and Setting House, containing every requisite, £3
Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 4/6
Pupa Diggers, 2/ and 3/ Beating Tray, 15/
Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
Breeding Cage, 2/6; with Two Compartments, 5/
The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
The New Sugaring Lantern, burns Benzoline, 5/6, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

Second Series, No. 33.]
[No. 340.]

SEPTEMBER, 1892.

[PRICE 6d.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON :

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,

56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 4/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

Second Series, No. 34.] OCTOBER, 1892.

[No. 341.]

[PRICE 6d.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

H. T. STAINTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,

56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite

OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

- Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
 Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
 Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanterns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 4/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

NOV 14 1892

Second Series, No. 35.]
[No. 342.]

NOVEMBER, 1892.

[PRICE 6d.]

THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON:

GURNEY & JACKSON (MR. VAN VOERST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,

56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite

OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

Steel Knuckle Jointed Net, folds up for pocket, 4/6 Self-acting ditto, 7/6
Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/ Wire ditto, with Brass Screw, 2/
Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6 Balloon Net, 26 x 18, for Beating, &c., 6/
Telescope Net, 6/, 8/6, & 10/6 Self-acting Sweeping Net, 8/
Larva Box, 6d., 1/, 1/6, & 2/ Sugaring Tins, with Brush affixed, 2/6,
Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/ (new principle)
Bottle of Killing Fluid, 9d
Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
Mahogany Pocket Box, with glass to slide in groove, 4/6
Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
Exchange Lists, 1d. (Postage, 1½d.)
Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
Setting and Drying House, complete, 10/6, 12/6, and 15/6
Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
The Entomologist's Store and Setting House, containing every requisite, £3
Improved Pocket Lanthorns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 4/6
Pupa Diggers, 2/ and 3/ Beating Tray, 15/
Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
Breeding Cage, 2/6; with Two Compartments, 5/
The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

Second Series, No. 36.] DECEMBER, 1892.

[PRICE 6d.]

THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

C. G. BARRETT, F.E.S. W. W. FOWLER, M.A., F.L.S.

G. C. CHAMPION, F.Z.S. R. M'LACHLAN, F.R.S.

J. W. DOUGLAS, F.E.S. E. SAUNDERS, F.L.S.

H. T. STANTON, F.R.S.

SECOND SERIES—VOL. III.

[VOL. XXVIII.]

—♦—
254911
DEC 9 1892
LIBRARY OF CONGRESS

“J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

LONDON :

GURNEY & JACKSON (MR. VAN VOORST'S SUCCESSORS),
1, PATERNOSTER ROW.

SOLD IN GERMANY BY FRIEDLÄNDER UND SOHN, BERLIN.

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE.

E. H. MEEK, Naturalist,

56, BROMPTON ROAD, LONDON, S.W.,

Supplies Entomologists with every Requisite

OF THE BEST MAKE.

NEW PRICED CATALOGUE ON RECEIPT OF STAMP.

All Orders, when accompanied by Post Office Order, will receive immediate attention.

- | | |
|---|--|
| <p>Steel Knuckle Jointed Net, folds up for pocket, 4/6
 Ladies' Umbrella Net, 5/ Cane Ring Net, with Stick, 2/
 Pocket Folding Net, 3 Brass Joints, 3/6 & 4/6
 Telescope Net, 6/, 8/6, & 10/6
 Larva Box, 6d., 1/, 1/6, & 2/
 Pocket Relaxing Box, 3/ Killing Box, 9d. & 1/</p> | <p>Self-acting ditto, 7/6
 Wire ditto, with Brass Screw, 2/
 Balloon Net, 26 x 18, for Beating, &c., 6/
 Self-acting Sweeping Net, 8/
 Sugaring Tins, with Brush affixed, 2/6, (new principle)
 Bottle of Killing Fluid, 9d
 Corked Setting Boards, 6d, 7d, 8d, 9d, 10d, 11d, 1/, 1/2, 1/4, 1/6, 1/8, 1/10, & 2/ each
 Mahogany Pocket Box, with glass to slide in groove, 4/6
 Entomological Pins, any size, Gilt or Plain, 1/ per box. Four Sizes, mixed, 1/ per oz.,
 Exchange Lists, 1d. (Postage, 1½d.)
 Bottle of Mite Destroyer, 1/ Willow Chip Boxes, nested, four sizes, 2/6 gross.
 Setting and Drying House, complete, 10/6, 12/6, and 15/6
 Pocket Box, 6d., 9d., 1/, and 1/6 Postal Boxes, 6d.
 The Entomologist's Store and Setting House, containing every requisite, £3
 Improved Pocket Lanterns, 4/ and 5/, Zinc Oval Pocket Box, 1/6, 2/, and 4/6
 Pupa Diggers, 2/ and 3/ Beating Tray, 15/
 Corked Store Boxes, best make, 2/6, 3/6, 4/, 5/, & 6/ Ditto, covered in Green Cloth,
 Book Pattern, 16 x 11, 8/6 Tin Y, 6d.; Brass Y, 1/, for Cane Nets.
 Breeding Cage, 2/6; with Two Compartments, 5/
 The New Glass Killing Bottle, charged ready for use, 1/, 1/3, and 1/6
 The New Sugaring Lantern, burns Benzoline, 5/, 6/, & 10/6</p> |
|---|--|

A LARGE ASSORTMENT OF BRITISH INSECTS KEPT IN STOCK.

DEALER IN BRITISH AND FOREIGN BIRD SKINS.

Priced Catalogue on receipt of Stamp.

ENTOMOLOGICAL CABINETS, from Twelve Shillings to Forty Guineas, kept in stock.

SHOW ROOM FOR CABINETS

CABINETS OF EVERY DESCRIPTION MADE TO ORDER. ESTIMATES GIVEN.

Published every Thursday, price 6d.,

NATURE: A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

Yearly Subscription, 28/. Half-Yearly, 14/6. Quarterly, 7/6.

Post Office Orders to be made payable at King Street, Covent Garden, W.C.

The attention of all interested in the general progress of knowledge is earnestly invited to this Journal of Science, which has become the accredited organ of the leading scientific men in both the Old and the New World.

One of the leading objects of the Publishers of *Nature* is to awaken in the public mind a more lively interest in Science. With this end in view, it provides original Articles and Reviews, written by scientific men of the highest distinction in their various departments, expounding in a popular and yet authentic manner, the

GRAND RESULTS OF SCIENTIFIC RESEARCH,

discussing the most recent scientific discoveries, and pointing out the bearing of science upon civilization and progress and its claims to a more general recognition, as well as to a higher place in the educational system of the country.

Every intelligent man is now expected to know something of what is going on in the scientific world; the columns of *Nature* will give a summary of it—varied, compressed, and authentic.

London: MACMILLAN AND Co., Bedford Street, Strand, W.C.

* * * Owing to continued indisposition, Mr. STANTON requests his correspondents not to send him insects for examination, &c., at present.

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the Session 1892—3:—

Wednesday, December 7th, 1892; and (Annual) January 18th, 1893.

ENTOMOLOGICAL SOCIETY OF LONDON.—WEDNESDAY, DECEMBER 7th, 1892,

At 7 p.m.—PAPERS TO BE READ:

- (1) "Further Observations upon Lepidoptera (illustrated by the Oxy-Hydrogen Lantern):" by Edward B. Poulton, M.A., F.R.S.
- (2) "The Effects of Temperature on the Colouring of *Pieris napi*, *Vanessa Atalanta*, *Chrysophanus phlæas*, and *Tephrosia punctulata*:" by Frederic Merrifield, F.E.S.
- (3) "Notes on Hydroptilidæ belonging to the European Fauna, with Descriptions of New Species:" by Kenneth J. Morton; communicated by Robert McLachlan, F.R.S.
- (4) "On some neglected points in the Structure of the Pupa of Heterocerous Lepidoptera, and their probable value in classification; with some associated observations on larval prolegs:" by Thomas Algernon Chapman, M.D., F.E.S.
- (5) "Description of a New Species of Butterfly, of the genus *Calinaga*, from Siam:" by James Cosmo Melvill, M.A., F.L.S.

WATKINS & DONCASTER, Naturalists,

Keep in stock all Articles for Entomologists, Ornithologists, Botanists, &c.: Umbrella Net, 7/6; Folding Cane or Wire, 3/9, 4/6; Plain Ring Net, 1/8, 2/3, 2/6; Pocket Boxes, 6d., 9d., 1/-, 1/6; Store Boxes, with Camphor Cells, 2/6, 4/-, 5/-, 6/-; Zinc Pocket Boxes, 9d., 1/-, 1/6, 2/-; Setting Boards, from 6d. to 1/10; Complete set of 14 boards, 10/6; Breeding Cages, 2/6, 4/-, 5/-; Sugaring Tins, 1/6, 2/-; Sugaring Mixture, ready for use, 1/9 per tin; Setting Houses, 9/6, 11/6, 14/-; Glass Topped and Glass Bottomed Boxes, from 1/8 per doz.; Zinc Killing Boxes, 9d., 1/-; Coleoptera Collecting Bottles, 1/6, 1/8; Collecting Box, containing 26 tubes (very useful for Coleopterists, Microscopists, &c.), 5/-; Brass Chloroform Bottle, 2/-.

Improved Pocket Pupa-digger in leather sheath (strongly recommended), 1/9; Steel Forceps, 2/- per pair; Pocket Lens, from 1/- to 8/6.

Taxidermists' Companion, containing most necessary implements for skinning, 10/6. Scalpels, with ebony handles, 1/3; Fine Pointed Scissors, 2/- per pair; Brass Blow-pipe, 6d.; Egg Drills, 3d.; ditto, best quality, 1/- each; Botanical Vasculum, 1/6, 2/9, 3/6, 4/6, 7/6; Label List of British Macro-Lepidoptera, with Latin and English Names, 1/6; List of British Lepidoptera (every species numbered), 1/-; or on one side for Labels, 2/-.

A large stock of British, European, and Exotic Lepidoptera, Coleoptera, and Birds' Eggs.

ENTOMOLOGICAL PINS.

LIVING OVA AND PUPÆ OF MANY SPECIES NOW ON HAND.

Show Room for Cabinets, &c.

ONLY ADDRESS—

36, STRAND, W.C., Five Doors from Charing Cross,
LONDON.

Birds and Mammals, &c., Preserved & Mounted by first-class workmen

Our New Price List (68 pp.) sent post free to any address on application.

CONTENTS.

	PAGE
<i>Elenchus tenuicornis</i> , Kirby, and its host.— <i>E. Saunders, F.L.S.</i>	297
The life-history of <i>Lampronia capitella</i> .— <i>T. A. Chapman, M.D., F.E.S.</i>	297
Notes on Trichoptera and Neuroptera from Ireland.— <i>K. J. Morton</i>	301
On two new and some other Japanese species of Ephemeridæ.— <i>Rev. A. E. Eaton, M.A., F.E.S.</i>	302
Description of a new species of <i>Rhizophagus</i> .— <i>W. G. Blatch, F.E.S., and A. C. Horner, F.E.S.</i>	303
Practical hints on sugaring.— <i>W. Holland</i>	304
Note on the application of "sugar".— <i>G. B. Longstaff, M.D., L.C.C.</i>	306
Coccids in Ants' Nests.— <i>W. W. Smith</i>	307
Note on <i>Tanyzonus bolitophilæ</i> , p. 275.— <i>Rev. T. A. Marshall, M.A., F.E.S.</i>	308
<i>Vanessa Egea</i> ab. <i>J-album</i> , Esp., in November.— <i>Frank Bromilow</i>	308
Note on <i>Abraxas ulmata</i> .— <i>J. Gardner, F.E.S.</i>	308
<i>Colias Edusa</i> (<i>Helice</i>) bred.— <i>W. A. Luff, F.E.S.</i>	308
<i>Micra parva</i> in the Isle of Purbeck.— <i>Eustace R. Bankes, M.A., F.E.S.</i>	308
<i>Vanessa Antiopa</i> in the Isle of Purbeck.— <i>Id.</i>	309
Re-occurrence of <i>Acrolepia marcidella</i> in the Isle of Purbeck.— <i>Rev. C. R. Digby, M.A.</i>	309
<i>Plusia moneta</i> .— <i>R. McLachlan, F.R.S.</i>	309
Is <i>Tipula dispar</i> , Hal., identical with <i>T. pagana</i> , Meig.?— <i>C. W. Dale, F.E.S.</i>	310
Captures of <i>Amalopsis straminea</i> and <i>occulta</i> in Devon.— <i>Id.</i>	310
<i>Psallus albicinctus</i> , Kbm.— <i>E. Saunders, F.L.S.</i>	310
Note on <i>Cetonia floricola</i> , Herbst.— <i>R. W. Lloyd, F.E.S.</i>	310
Coleoptera at Ardara, Co. Donegal.— <i>Rev. W. F. Johnson, M.A., F.E.S.</i>	310
<i>Stenophylax alpestris</i> at Dunford Bridge, West Yorkshire.— <i>G. T. Porritt, F.L.S.</i>	311
REVIEWS.—Catalogue of Eastern and Australian Lepidoptera-Heterocera in the Oxford University Museum, Part i: by Col. C. Swinhoe, F.L.S., &c.	312
Vegetable Wasps and Plant Worms: by M. C. Cooke, M.A., LL.D., A.L.S.	312
SOCIETIES.—Birmingham Entomological Society	313
Cambridge Entomological, &c., Society	313
Lancashire and Cheshire Entomological Society	314
South London Entomological, &c., Society	314
Entomological Society of London	315
TITLE PAGE, INDEX, &c.	i—xv

NOTICE TO SUBSCRIBERS.

Vol. III, New Series (1892), ends with the present Number. Subscriptions, 6/- (POST-FREE) for 1893 are now due. Post Office or Postal Orders may be sent to the 'Editors' (payable to GEORGE WEBB at the Chief Office),

Care of Gurney & Jackson, 1, Paternoster Row, London, E.C., or to either of them personally at his residence.

Intending new Subscribers should send in their names and addresses as soon as possible.

The Editors are ready to entertain proposals for continuous Advertisements, or for a term.

Any one wishing to discontinue his Subscription must give notice to that effect on or before the 20th inst., otherwise he will be considered liable for the ensuing Vol.

NOW READY,

THE ENTOMOLOGIST'S MONTHLY MAGAZINE, Vol. III, New Series (Vol. XXVIII), strongly bound in Cloth. Price 7/-.

Covers for binding, 1/- each.

N.B.—Vols. x to xxiv, xxvi and xxvii can be had separately, price 7/- each. Vol. xxv, 10/6. Vols. i to ix are 10/- each, and can only be obtained by purchasers of the complete set (i to xxviii). But the earlier Vols. are out of print, and complete sets can only be had occasionally.

London: GURNEY & JACKSON, 1, Paternoster Row, E.C.

4.

77

MAR 23 1919

de Balanda

Me 4 / 1919

SMITHSONIAN INSTITUTION LIBRARIES



3 9088 00908 2108